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INDIA RUBBER WORLD

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Volume 89

December 1, 1933

Number 3

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Published monthly by Bill Brothers Publishing Corp.,
420 Lexington Ave., New York, N. Y. Cable Address:
ELBILL, New York. Subscription \$3.00 per year post-
paid in the United States; \$4.10 per year postpaid to
Canada; \$3.50 per year postpaid to all other countries.



Other Bill publications are: *Drapery Profits, Pre-
mium Practice, Radio Merchant, Rug Profits, Sales
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INDIA RUBBER WORLD

Published at 420 Lexington Avenue, New York, N. Y.

Volume 89

New York, December 1, 1933

Number 3

Rubber Latex Sizing for Carpets and Rugs¹

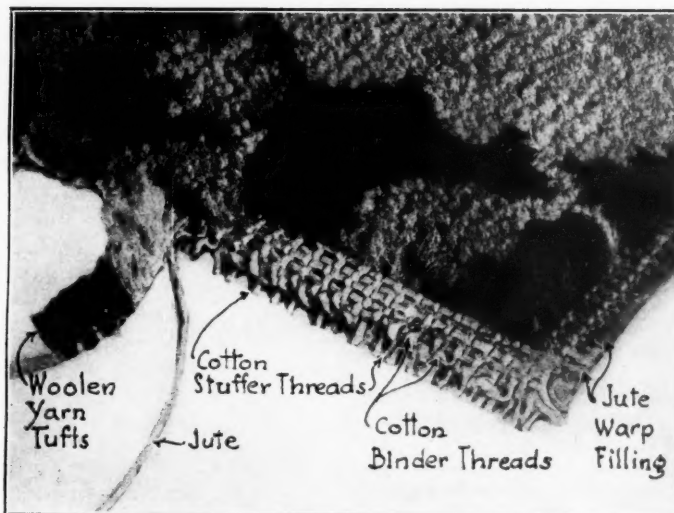
WOOL carpets and rugs produced in the United States in 1931 amounted to \$86,402,-725, f. o. b. factory prices, a decrease of 50.4% as compared with 1929. This total was made up as follows: carpets, 13,-257,403 square yards, value \$25,192,053; rugs of sewed strips, 1,338,-425 square yards, value \$4,007,346; rugs woven whole, 29,447,615 square yards, value \$57,203,326.²

Axminster Weave

Several types of weaving are used in manufacturing soft floor covering, of which the Axminster weave prevails to the extent of 60% of the total yardage production. This construction is briefly noted in the following paragraph quoted from an official source.³

"An Axminster is easily distinguished from any other weave because the fabric can be rolled lengthwise but is the only one which cannot be rolled crosswise. This is due to the stiff jute back construction.

"In the Axminster weave the tufts are inserted by the loom row by row between the warp threads, and are then bound down by the weft and woven into the back of the



Mohawk Mills, Inc.

Fig. 1. Axminster Construction

fabric. Each tuft is used on the surface to form part of the design. Unlike Wilton fabrics, there is in Axminster no yarn hidden from view in the body of the fabric, except what is needed for attachment to the binding weft."

A general view of Axminster construction, shown in Figure 1, indicates the facility with which the weave can be raveled and the desirability of rubber locking its parts as a preventive measure—to say nothing of any other advantage.

The appearance of a high grade and a medium grade Axminster weave is pictured in Figure 2. This hard smooth back weave is the source of danger on a smooth floor.

All carpets and rugs, whatever their weave, are more or less limp as woven. Therefore it is customary to apply to the back of the weave a coat of glue size to stiffen and give body to the goods, thus causing them to lie flat in place.

Mixing and Sizing Machinery

The equipment necessary for carpet and rug sizing consists of an open kettle with stirring paddles for cooking and stirring the ingredients in water to a paste of proper consistency. It is then applied to the carpet as the latter is drawn under tension through the sizing machine and drier. This machine consists of a spreader of

¹ Data from McCarty Aniline & Extract Co., Inc., 72 Cliff St., New York, N. Y.

² Census of Manufactures: 1931, United States Department of Commerce, Bureau of the Census, Washington, D. C.

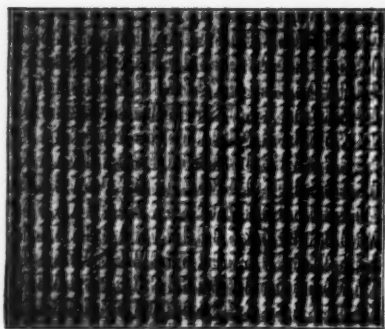
³ "Floor Coverings of America," Institute of Carpet Manufacturers of America, Inc., Chrysler Building, New York, N. Y.

ordinary form in which the amount of size applied can be regulated. The sized goods pass directly into the drying chamber, that is heated by steam circulating coils and ventilated by motor driven exhaust fans spaced at intervals along the length of the drier, which may be 150 feet more or less according to conditions governing operations.

Latex Carpet Sizing

Sizing carpets and rugs with glue sizing is an old established custom, but it seems destined to be superseded ultimately by the substitution of latex sizing because of the advantages of the latter. To begin with, no new apparatus is required in changing from glue size to latex; no fire risk is involved since the vehicle in both sizings is water; the minor increase in cost is negligible and is more than compensated by simplified technique and undisputed practical advantages in respect to the goods when latex sized.

The outstanding advantages are: the coating of latex penetrates the basic construction of the goods and by vulcanization holds that construction securely against unraveling; it waterproofs the back and grips a smooth floor surface that prevents slippage of the carpet when trod upon. This anchorage is a safety factor of prime importance in the prevention of injury to persons stepping upon so-called "scatter rugs" laid on polished floors. Then, too, latex sized carpets are more pliable than glue sized, consequently if gathered up at random



Mohawk Mills, Inc.

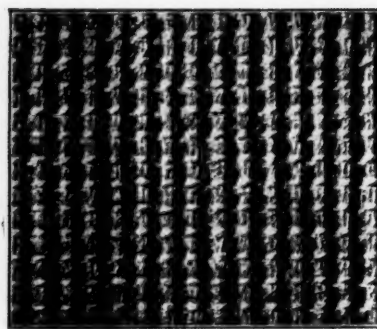


Fig. 2. Back of Axminster Weaves

High Grade, 11 Rows per Inch

Medium Grade, 7 Rows per Inch

when cut and needs no binding or sewing. Thus when 2 straight edges are pushed tightly together, the pile meshes so that the seam is scarcely discernible. A web of rubberized strapping is applied to the back of the seam to hold it together.

Latex sizing is being used extensively on the backs of small rugs running in size from 22 by 36 inches to 36 by 72 inches. The method practiced is to supply the rug manufacturer with the materials necessary, after an expert survey of his equipment and product to determine the latex composition suitable for the results desired. The manufacturer is thus furnished with tested Revertex in drums as imported and with suitable packages of mixed dry ingredients ready for incorporation into sizing in his own plant as needed. The latex and ingredient proportions thus fixed include the essential vulcanizing agents, accelerators, and antioxidants.

The chemical balance of the mixing differs according to the plant conditions of the rug manufacturer so that the sized goods leave the drier properly cured, whatever the heat and the speed of the apparatus. Commonly the curing and drying temperature is 150 to 175° F., and the time 20 to 30 minutes.

and subjected to pressure in that condition, the back will not be injured and the goods will lie as smooth as originally.

Latex composition size penetrates the bottom of the weave and permanently locks in the pile tufts. Therefore the carpeting forms its own selvage

Easy Compounding Effects

RAW rubber today is about the cheapest compounding ingredient possible to use when account is taken of its low gravity. This results in the apparent paradox that the best mixing is cheaper than its inferior. Compounding is, of course, necessary, according to the purpose of the vulcanized product. For example, reclaimed rubber may be more expensive than raw rubber on volume cost and yet be desirable and even essential in a mix for a certain purpose. Milling and processing costs also must be considered.

Today the compounder can put into a mix as much raw rubber as advisable in view of the purpose under consideration, compound as little as possible, and turn out the best possible mix for the job at the same price as a much inferior, more heavily compounded one. No longer can a compounder by the exercise of his art turn out a mixing at half the price of his competitor and yet with equal physical properties. The unprecedented fall in price of the raw material prevents the skill of the compounder being exercised as it was years ago.

The situation has been aggravated by the advent of

the technical service sections of those companies selling compounding ingredients which publish accurate data and advice on the best application of their products, backed by the experimental results obtained in their own research laboratories. They will also undertake the investigation of customers' problems and, in fact, do everything possible to extend the application of their products with an interested consumer. This service is highly welcomed by most manufacturing companies and compounders in small factories, the research facilities of which are thus effectively supplemented by data directly applicable to efficient production.

Low prices of crude rubber and free compounding technical service encourage setting up small manufacturing units. The adverse effect of these is the production of quality competitive goods with overhead cost so far eliminated that they can be offered with profit at prices seriously under those of more substantial concerns. Fortunately or unfortunately, according to the point of view, consumers of rubber goods are thus being educated that the lowest-price article may be as good as any other.

Sources of Waste in Tire Manufacture—V

Frank Allan Middleton

IN THE previous articles of this series the waste problems of the various departments of tire manufacture have been discussed individually. Such a plan of segregation, while essential for a comprehensive survey of so complex a subject, tends to present the problems of each section in an isolated fashion which voids them of their true continuity. To tackle successfully the waste problem of a factory it must be viewed as a single subject, each aspect of which can be made subject to the same, or similar, correctives and reasoned upon with the same tenets. The same psychological phenomena and difficulties of administration and management are present throughout the factory; the influences to which the product is exposed are of a character which, in the main, can be common to any and every stage of manufacture; and wherever men and machines are jointly responsible for the act of production, there will be problems that have a common root, however dissimilar their ultimate expression may be.

In the properly organized factory, therefore, the question of waste reduction is delegated to a special department, the duties of which are to discover new sources of waste, keep accurate scrap records, study the influences at work in producing them, and put into operation practices reducing the waste-to-production ratio.

It will have been noticed that the treatment of this subject of waste has had principal reference to the factors determining actual waste of material, and this is strictly the province of the Waste Control Department. If the subject is to be reviewed in its entirety, however, there are other items requiring reference which, although of a less tangible character, are just as important as material waste. They are labor and power (electric, hydraulic, pneumatic, and steam).

Labor

The study of labor cost has, of late years, assumed almost the proportions of a profession. The principles of time- and motion-study are common to all industries, and tire manufacturers have not been slow to accept them and reap the benefits of positive control of labor. No doubt exists that payment scales set up as the result of a good time-study system are as scientifically accurate as can be hoped for in dealing with the complex human machine, and any manufacturer whose labor outgo is not controlled in such a manner cannot know where opportunities for waste exist.

The point of view of the time-study man is a great asset to the tire manufacturer. The former sees things in a different light from that of the technologist; he is critical and analytical of mind and cultivates the purely business outlook. He permits nothing to be done without a reason, demands authority and justification for such reasons as are advanced, and is altogether a most exacting person with whom to deal. But when he has put his fine comb through every department, has each man put-

ting 60 minutes into every hour, and has every item of labor defined and specified, the value of his efforts becomes apparent; and the manufacturer begins to wonder how much bigger his bank balance would be if he had started the system a decade or 2 sooner.

The time-student's work aims at defining what is 100% efficiency for every bit of work done in the factory, then analyzes the daily efficiency for such work. Many factors may tend to reduce efficiencies below 100%: factors relating to administration and planning, to technical difficulties such as have been discussed in previous articles, to psychological or physiological adaptability, or to deviation from established routine.

Administration and Planning

The ultimate efficiency and economical conduct of a manufacturing enterprise is essentially a reflection of the ability, or otherwise, of those responsible for directing its affairs. Without administration of a high quality, even the economies that the application of time-study can effect can be frittered away in unproductive on-costs. The key to the situation is coordination. Unity and harmony of purpose must exist throughout the entire organization. Just as the department manager is the focal point in the functionalized scheme of organization which characterizes the modern tire plant, so must there be those whose duty it is to coordinate the work of the manufacturing departments. In plants such as miscellaneous engineering shops these duties will often belong to the Progress Department; but where, as in the tire factory, the "progress" idea is not often developed beyond that adequate for dealing with "preference" orders, the Production Planning Section must be responsible for insuring the maximum of not only coordination, but also cooperation.

It is recognized and freely admitted that the work of the production scheduler in a high-pressure plant is no bed of roses. Almost innumerable factors affect the efficiency of a department and hinder the progress of materials through the factory so that the output is depreciated through lack of coordination. For example, delay in the tire-building room may be a symptom of some difficulty or breakdown along any part of the production line. The builder may have everything set for producing a certain size, only to find that, say, his beads are not coming forward. This fault may be due to failure in the bead unit itself, a machine breakdown, for instance. On the other hand a shortage of stock may be responsible. This must then be traced back until the actual cause of the trouble is definitely located. It may ultimately prove, let us say, that the wire-covering machine could not get its rubber stock; yet an immediate assumption that the mill room was at fault is not necessarily justified. Inquiry must be pursued until something is definitely established; and it may transpire that the laboratory is holding up doubtful stock for testing or that the careless-

ness of the operator of the insulating extruder has caused a quantity of stock to "burn up," thus shortening reserves. It may even be that the planning department itself was to blame; for example, by under-ordering from the mill room, or "preferencing" another stock which has taxed the capacity of the mills, necessitating holding over the mixing of the insulation stock.

Similarly with any other component of the casing; and when it is realized that the plant may have 100 different sizes on its ticket in one day and that, moreover, each size consists on the average of some half-dozen components, it will be admitted that to schedule the work so that everything will be in its place at the desired time, without involving the carrying of appreciable "work-in-process" stocks, will demand no little ingenuity, foresight, and technical experience.

In its lowest character the Scheduling Department is an ordering department; in its highest, it is the means toward coordinating and unifying a factory and rendering it purposive.

Organization

The work of the planning section, however, is essentially but a part of the complete system of organization; it is, if you like, that which makes the latter a coherent and responsive entity, but it should not be confused with the process of organization itself.

"Organization," it has been said, "is the process of assigning duties to individuals or groups, selected for the purpose, so as to achieve specified ends effectively and economically through the coordination and combination of all their activities."

In effect, therefore, the planner is complementary to the organizer, who must prosecute his work with the fullest understanding, sympathy, and cooperation of the other. Starting with the most diverse equipment imaginable—in which human nature, factory layout, and mechanical limitations are but the chief elements—the organizer must arrange and devise so that with all its complexity he has built an organization having as its aim the economical production of goods, which can be made to work as a single effective unit.

How vital is the human problem in this work of organization is immediately obvious from the words of the definition: "... the process of assigning duties to individuals or groups, selected for the purpose." In its fullest sense this statement implies the selection of individuals for the jobs for which they are best suited, a scheme rendered practicable by the advances made by experimental psychologists. The extent, however, to which the findings of these workers have been applied to tire manufacture is uncertain, and it may be assumed not unreasonable to suggest that considerable advantages may yet accrue to this industry when more complete utilization is made of the industrial psychologist. For any practical good to arise from the new knowledge it would seem that a production organization must employ its own specialist to relate his study not merely to the type of manufacture being carried on, but to the peculiarities of system and method employed.

Management

Reference has been made to the importance of able administration in the success of a manufacturing enterprise, but this should not be confused with management. Administration and management are separate functions; one determines policy, and the other executes it. Just as, however, the most able management in the world could never make a success of an ill-defined, uncertain, or shifting policy, so is a good administration rendered abortive by managers who do not understand, or only

incompletely understand, its objects and desires, or who fail to interpret and fulfill them.

Nevertheless an efficient administration and executive further require the assistance of capable and intelligent foremen and supervisors. The foreman is the true link between workman and executive; on him depends the ultimate strength and spirit of the organization. To the worker he represents the management; to the management he represents the worker's point of view. If he is incapable of interpreting ideas to the other, endless misunderstandings, mistrust, and antagonism may be engendered and a spirit develop that is inimical to the interests of employer and employed alike. The foreman's prime responsibility is to see that the worker understands the policy of the firm in so far as his work in the factory is affected and the means by which the policy is to be pursued. Really, the magnitude of the task that rests upon the shoulders of the foreman—no less than that of the procreation of a spirit of trust and friendliness between factions having little fundamentally in common—would suggest that no type of mentality could be too high for the responsibility. It is significant that the tendency is increasing on both sides of the Atlantic to entrust these pivotal positions to educated men hardened by a useful period of shop experience.

Mention of the latter point introduces the wide subject of promotion expectation. To the ambitious man the possibility of promotion is a very real incentive, over and above purely monetary considerations. In view of the desirability of having educated men in pivotal positions, and the consequent tendency for drafting in men from outside for higher posts, are all avenues for advancement to be denied the worker who feels capable of doing a more important job? Here is probably the most human problem associated with the question of waste; the waste of the latent mental powers of a capable man. Obviously there must often be a certain disparity between the work a man is called upon to perform and the work of which he is ultimately capable; this is unavoidable, particularly in a branch of manufacture so highly specialized as tire making; but where the exceptional man is concerned, this waste is not only a loss to the person himself, but to the organization and, in the end, the community. The ambitious man must feel that his weekly pay is not his sole reward for work conscientiously performed, but that every extra bit of effort and thought he has put in is in the nature of an investment which may one day be realized in the shape of promotion. Without this, the organization is less a living microcosm, pulsing in every minute cell with coordinated activity, than a stodgy heterogeneity of units, resisting and unsympathetic.

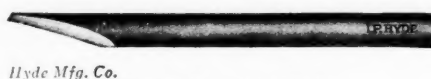
Conclusion

Although some attempt has been made in this last article to portray the problem of waste as something underlying and influencing every single act and thought which go to the production of a pneumatic tire—or any other commodity, for that matter—the net result is no more than a number of stray thoughts upon a few restricted aspects of organizing and ordering the work of a factory. They are introduced, nevertheless, to demonstrate the ubiquity of the problem and its many unexpected guises.

It must be remembered that every new refinement and improvement devised is possible only because of the destruction of a former source of waste, and that industrial progress itself is only a synonym for "waste-consciousness," since every progressive step by closing up an avenue for waste must thereby increase industry's sensitiveness to those which remain.

Rubber Cutting Knives

SPECIALIZED tools were highly developed in many industries before their value was sufficiently recognized in the rubber factory. Calenders, refiners, and mills had increased in size, speed, and strength. It was no longer necessary to coddle a machine to prevent it from stalling or smashing a mill housing or the neck of a roll. More stock could be handled per operator. But



Hyde Mfg. Co.

Fig. 2. Extension Blade

hand knives remained of conventional form. The common butcher knife answers perfectly well for cutting crude rubber and reclaim for batches. The practice of many purchasing agents of listing only one other style of hand knife, the common square-end shoe knife, for all purposes in the plant is decidedly mistaken economy. This knife, usually inexpensive, is that made for leather shoe work. It has a small round handle and a 5-inch square-end blade and is good for general trimming, skiving, or slitting, but is awkward on a mill or in warming up stock for the calender. For this work the operator grasps the knife close to the blade and needs a strong non-slipping hold for back hand cutting. The blade should have a thin, sharp point to penetrate through the stubborn mass of gum to the mill roll underneath.

The usual practice, where the mill man has not the knife he needs, is to break off 2 inches or more from the blade of a new or discarded knife and grind down the remainder to a point. If a really de luxe affair is desired, the operator enlarges and improves the grip by wrapping the handle with friction tape to the desired size, or sometimes he slips a sheath of garden hose over the handle and part of the blade and wedges it fast with small pieces of wood. This provides a more satisfactory grip than the small wooden handle. The hose sheath, moreover, is adjustable since it can be trimmed down progressively as the blade loses length by continued sharpening.

Profiting by the clever resourcefulness of the worker the trade has gradually evolved knives that more adequately serve the needs of mill men and other rubber workers. Plants which formerly made a practice of taking knives discarded in other departments and grinding them down for use in the mill room have found that operatives commonly avoid these leftovers. Many op-



Parker Wire Goods Co.

Fig. 1. Square Pointed Knife

eratives prefer to purchase special knives of their own rather than use those offered by the management. What the mixer wants, preeminently, is a knife that will not turn

in his grip when he tackles the tough resilient mass rolling up to him. With the knife bequeathed by his neighbors of the making or cutting room, he may attain his desire after weeks of unsatisfactory work and continuous sharpening that reduces the blade to a point where its usefulness is practically over.

The knife manufacturers, ever alert to the need of special tools, have developed several types of knives for rubber work, which have met the deserved approval of the men best qualified to pass on their merits. Thus many practical forms of blades are available for every type of rubber work of mill, calender, cutting, and making departments. A number of these blades, mounted and unmounted, are pictured, and mention made of their special adaptation for the rubber worker.



Hyde Mfg. Co.

Fig. 3. Extension Blade Holder

Hand knife cutting in a rubber factory is done by 3 methods. First is a drawing cut to sever into strips a single layer of calendered rubber or fabric stretched upon a table. The ordinary square pointed shoe knife pictured in Figure 1 is the style used, and examples of the work are cutting rubber for hose tubes and covers for hose and belting; cutting bias blocks for hose plies and duck packing slabs.



Hyde Mfg. Co.

Fig. 4. V-Notched Knife

Second is the back hand cut in which the knife handle is gripped in a manner opposite to that of draw cutting, that is to say, with the blade extending from the outer edge of the hand. This position allows much pressure to be applied to push the short pointed, narrow blade through

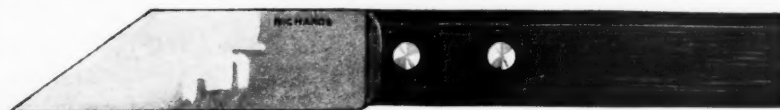


Russell Harrington Cutlery Co.

Fig. 5. Bead Trimming Knife

thick rubber or plied up fabric and enables the worker to exert sufficient force to cut through considerable thickness of material and to guide the blade accurately around a pattern of the form being cut. This method calls for blades of various shapes.

(Continued on page 37)



Parker Wire Goods Co.

Fig. 6. Knife for Lathe Cutting

Distributors' Tire Stocks

In the United States as of October 1, 1933¹

THIS report covers stocks of tires held by both independent dealers and mass distributors. Returns from these 2 groups are discussed separately below.

The regular semi-annual survey of tire stocks in hands of dealers, conducted since 1924 by the Rubber Section, shows the following comparable statistics, as of October 1, for stocks held by independent retailers in 1933 as against 1932. The number of reports received from dealers having stocks of casings was 2,282 less than in October, 1932. The average number of automobile casings per dealer was 61.3 on October 1, 1933, against 71.3 a year previous.

DEALERS' STOCKS OF AUTOMOBILE TIRES

	October 1, 1932			October 1, 1933		
	No.	Dealers Average Re- porting Dealer	per Dealer	No.	Dealers Average Re- porting Dealer	per Dealer
Total casings	1,586,833	22,246	71.3	1,224,540	19,964	61.3
High pressure	174,346	14,489	12.0	118,209	12,025	9.8
Inner tubes	2,077,616	22,517	92.3	1,577,561	20,422	77.2
Solids, etc.	14,380	712	20.2	14,338	523	27.4

(NOTE: Statistics for total dealers and total casings in the above table for 1933 include 675 late returns not received early enough to be admitted to other tabulations.)

High pressure casings, including both passenger car and truck sizes, which accounted for 13.09% of total stocks October 1, 1931, amounted to only 11.0% of total October 1, 1932, and 9.6% this year.

The following table compares average stocks per dealer reporting each item on October 1 in the years 1924 to 1933, inclusive. Note that the average stock of inner tubes for 1933 is a new low record.

AVERAGE STOCKS PER DEALER ON OCTOBER 1

	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933
Total casings ..	53.6	56.6	49.9	57.6	64.8	68.4	62.4	60.2	71.3	61.3
Balloon casings ..	16.3	17.5	19.8	30.7	44.0	(a)	(a)	(a)	(a)	(a)
High pressure casings	(a)	(a)	(a)	(a)	(a)	22.9	14.5	11.3	12.0	9.8
Inner tubes	79.9	99.1	93.8	103.1	107.4	103.4	89.2	80.8	92.3	77.2
Solids, etc.	(b)	25.0	23.9	26.1	23.4	24.2	22.7	19.1	20.2	27.4

(a) Number of dealers not tabulated separately on survey indicated.
(b) Comparable statistics for 1924 not available.

An analysis by volume groups has been prepared of the reports from dealers having stocks of casings, and a comparison made to similar data from the survey of October 1, 1932, as follows:

DEALERS CLASSIFIED BY VOLUME OF STOCK

	October 1, 1932			October 1, 1933		
	No. of Dealers	% of Total Dealers	No. of Casings	No. of Dealers	% of Total Dealers	No. of Casings
Less than 10.....	4,923	22.13	24,679	5,077	26.32	25,386
10—24	6,118	27.51	97,231	5,627	29.17	89,818
25—49	4,866	21.87	170,941	3,881	20.12	135,192
50—99	3,311	14.88	226,580	2,544	13.19	174,048
100—199	1,670	7.51	226,934	1,200	6.22	162,756
200—299	528	2.37	125,159	370	1.92	89,587
300—399	249	1.12	85,053	191	0.99	64,905
400—999	414	1.86	243,877	283	1.47	168,739
1,000 and over.....	167	0.75	386,379	116	0.60	264,584
	22,246	100.00	1,586,833	19,289	100.00	1,175,015

A special tabulation was made of the number of inner tubes, solid and cushion tires, and high pressure tires on

hand October 1, 1933, held by dealers classified by volume groups in the above table. The results of this tabulation follow for October 1, 1933, similar tabulations not having been made for other years:

Casings Volume Groups	No. of Reports	% of Total Casings	Inner Tubes		No. of Solids and Cushions	No. of High Pressure
			No.	% of Total		
None	1,192	...	15,789	1.04	723	....
Less than 10.....	5,077	2.17	94,988	6.25	5,432	3,385
10—24	5,627	7.64	157,687	10.38	1,512	10,955
25—49	3,881	11.51	205,416	13.53	1,481	14,680
50—99	2,544	14.81	233,853	15.41	1,590	17,801
100—199	1,200	13.85	186,333	12.27	561	16,031
200—299	370	7.62	94,356	6.21	510	8,336
300—399	191	5.52	71,330	4.70	262	5,634
400—999	283	14.36	182,297	12.00	994	17,181
1,000 and over ..	116	22.52	276,622	18.21	863	19,606
Total	20,481	100.00	1,518,671	100.00	13,928	113,609

This section covers the stocks reported by the 2 principal mail order houses and their chains of stores, 2 supply companies merchandising special brand tires (one through its own stores, and the other through independent dealers and oil stations), a third independent chain system, and also stocks reported by 3 oil companies selling tires through their stations in several states. Each of the above reported complete stocks, and in addition 3 tire companies reported the complete inventories of their company-owned stores. The stores operated by certain other tire manufacturing companies were circularized, and returns were received from about 37%.

The inventory actually reported as of October 1, 1932, and 1933 is shown below. There are additional oil company stocks, and the dealer-held stocks of certain of the tire companies included are not complete. The stocks reported in the October 1, 1931, survey are also shown, but they are not strictly comparable.

MASS DISTRIBUTORS' REPORTED STOCKS

	October 1, 1931	October 1, 1932	October 1, 1933
Total automobile casings.....	1,987,284	2,032,929	1,952,692
Inner tubes	1,847,440	2,109,690	1,935,830
Solid and cushion tires.....	3,350	2,285	4,720
High pressure casings	229,438	197,086	170,392

Assuming that the tire-company-owned stores which did not submit reports were holding average stocks the same as those stores of the same companies which did report figures, the total mass distributors' stock of casings, comparable to October 1, 1932, total figures, would be 2,473,000, an increase of 23,000 over the year previous. These figures are not inclusive of stocks held by oil companies selling through chains, except as indicated previously. The total mass distributors' stocks of inner tubes are similarly estimated at 2,375,000, a decline of 100,000 from 1932.

An idea of the true casings inventory position of the industry is given in the following statement, based on an assumption that there were 70,000 active independent tire dealers at the date of each of the last 3 surveys, plus estimated total stocks held by reporting mass distributors, plus the inventory of manufacturers (incomplete) as reported by The Rubber Manufacturers Association, Inc.

(Continued on page 37)

¹ Special Circular No. 3,495, Rubber Section, Department of Commerce, Bureau of Foreign and Domestic Commerce, Washington, D. C.

Resin-Gutta Gums

Applications of Balata, Gutta Percha, and the Lower Guttas

I. Torrence Gurman

INTRODUCED originally with a view to the substitution of rubber, the gutta perchas, supplemented later by balata, have come into their own and have created a range of products and applications worthy of special consideration. Some of the uses of these gums are unique; in others, which originally made possible the introduction of new "rubber" products, rubber is now being introduced as a substitute; in still others rubber is used to supplement them either for technical reasons or to lower their costs. Then again, there are a number of rubber products, the values of which are enhanced by the incorporation of one or more of these gums into their composition.

With the obviously close relation that exists between these gums and rubber it is surprising that more rubber manufacturers do not avail themselves of the possibilities which these materials offer. The chief cause seems to be the conception that in their use special equipment is required. While this condition is true to some extent, it is not sufficiently so as to be of consequence. By far the greatest part of the machinery employed is the usual run of equipment used in the manufacture of rubber products, such as mills, calenders, crackers, churns, presses, tubing machines, spreaders, and vacuum driers.

For the purposes to which these substances have been successfully applied no diluent or substitute other than rubber has yet been found. Generally speaking, where a choice has to be made between the use of one of these gums and rubber, the only factor in favor of the latter is cost. This is due to the fact that their thermoplastic and inert properties fit them for many special purposes, and despite the fact that they are almost never vulcanized, they age very well.

One exception exists: rubber belting, and in this case besides the matter of cost is the fact that rubber belting is more qualified to withstand high temperatures. Balata belting is ideally adapted for use where acid fumes or moisture prevail. It is tough, flexible, withstands low temperatures without becoming brittle, has a high coefficient of friction, requires little attention (occasional dressing with a small amount of castor oil), and because of its method of manufacture stretches very little in use; however, it must not be subjected to temperatures above 110°F. because the balata, being unvulcanized, becomes soft and tacky. The saving grace is the fact that continued operation under conditions that produce such a temperature is generally ruinous to any belt. That this matter of temperature is not met with enough to be serious is borne out by the fact that balata belting is practically standard in European countries and is *regain-*ing favor in this country. For some purposes, such as driving dynamos for supplying lighting in trains, balata belting is specifically designated.

Similarity of Guttas and Balatas

Basically the gutta in both balata and gutta percha is

the same in appearance, in physical, chemical, and optical properties, and in behavior. Samples of each, purified to less than 1% resin and freed from water and dirt, are as alike as 2 samples of the same material and as undistinguishable. In the case of 2 deresinated samples (see definition below) the chief difference is in the remaining impurities and, if carefully prepared, a difference in odor. Thus, as the resins and impurities are removed, the better grades of gutta percha and balata approach each other in character and utility. It is only natural, therefore, that with similar resin content and equal degrees of freedom from water and foreign substances (bark, sand, etc.) *both gums can be used for the same purposes* either alone or in conjunction with each other. This matter is of great importance to the manufacturer who is not bound to the purchase of one particular brand or type of gum. Thus either type of resin-gutta gum may, after proper preparation, be used for belting, cable insulation, or golf balls. With regard to the latter it is interesting to note that American manufacturers are prejudiced in favor of balata; while in the United Kingdom gutta percha, used extensively, in some cases is preferred. This state of affairs is more the result of apparent expedience than actual experience. The proximity of the United States to the source of balata on the one hand, and the long-standing British interests in the gutta percha industry together with the fact that golf balls were for a long time "guttie balls," on the other, must be to some extent responsible for the existing condition.

Applications and Consumption

These gums are utilized in 3 ways: as a resin-gutta gum; as gutta freed from resin; and as resin. As a resin-gutta gum it is used for cables, belting, cements, druggists' sundries, chewing gum base, etc., and is prepared for use either by washing and drying alone or in conjunction with a treatment such as a "deresinizing" (partial removal of the resins) or "resinating" (addition of resin). As resin-free gutta it is used for golf balls, dental impressions, surgical gauze, etc., and is prepared either by "deresinating," treating the washed gum with solvent to remove as much of the resins as is practical, or by "precipitation," usually the solution of the deresinated gum in hot naphtha, removal of the impurities from the solution by filtration, precipitation, sedimentation, etc., and recovery of the gutta by precipitation from the solution by cooling. An alternate method is to recover the gutta by supersaturation, but the product in both cases is designated "precipitated." The resins recovered from the solvent are utilized in cements, varnishes, as a softener, or for raising the resin content of low resin gums. They are also used in chicle substitute.

Formerly of the 3 chief applications of the resin-gutta gums were, in the order of their magnitude, cable, belting, and golf ball covers. In the second group of 3

were chewing gum base, tape, and cements, in that order. As a result of the advent of the radio and the success met with in the introduction of rubber insulation, the application to cable manufacture has greatly diminished. The following figures are not an absolute measure of what has taken place, but, because gutta percha was the gum chiefly used for this purpose, they are a fair indication of the trend.

Year	U. S. Imports of Gutta Percha Lbs.
1926	3,236,704
1927	3,346,146
1928	3,578,442
1929	1,000,580
1930	113,210
1931	274,624
1932	425,217
1933 (6 mos.)	771,859

The last 4 figures must be construed in the light of recent conditions and the tendency to reduce inventories. The consumption, as contrasted with the imports, would run about 300,000 to 450,000 pounds during 1930, 1931, and 1932. The following figures are even more emphatic.

Year	Imports of Gutta Percha Lbs.
1920	7,115,566
1925	3,486,243
1930	113,210

About 1927 a distinct movement away from balata belting began, which continued until 1931, when the movement started in the other direction. Both in this industry and that of golf balls balata was preferred. The growth of the latter offset the decreased consumption for belting purposes, and the total has been maintained as indicated by the following.

Year	Balata Imports Lbs.
1924	562,176
1925	600,203
1926	792,165
1927	1,303,215
1928	1,638,213
1929	1,630,642
1930	1,123,546
1931	2,704,793
1932	1,584,767
1933 (6 mos.)	1,998,436

The golf ball industry has not only become the largest consumer of balata, but is absorbing more of this material than all the other applications combined. The average import during 1928 to 1932 inclusive was 1,736,392 pounds. The average production of golf balls during 1929 and 1931 (the last 2 United States census years) was 2,545,448 dozens. Even allowing very generously for the lower requirements in the case of "remade" balls, this figure calls for a crude balata consumption of well over a million pounds. The growth of this industry, brought about by the increased popularity of golf, has been augmented by the continued decrease in imports of golf balls, indicated in the following table.

Year	Golf Ball Imports in Dozens (Approximated to Nearest Unit of 5,000 Doz.)
1925	235,000
1926	300,000
1927	250,000
1928	220,000
1929	215,000
1930	155,000
1931	105,000
1932	120,000
1933 (6 mos.)	55,000

Another application of these resin-gums which has grown in proportions is the production of chewing gum base. Practically all the chicle imported is used for this purpose, but this gum by no means satisfies the requirements. Pontianak (jelutong), which is actually a rubber, but is classed with the lower guttas, such as guttas Siak,

Soh, Sundek, etc., because it has a high content of resins similar to those in balata and gutta percha, is used as a chicle substitute in combination with the lower guttas and balatas.

Utilization in Manufacture

Material to be used in insulating copper conductors for submarine cables must possess 3 qualifications. First, it must have suitable electric constants (resistance, conductance, and dielectric constant). Second, it must have mechanical adaptability to the service to which it is to be put. Third, it must be able to maintain these characteristics over a long period of time under the conditions of use. Gutta percha and balata, when properly cleaned and dried, are ideally adaptable. A typical insulating material contains the following:

	%
Gutta	50 to 60
Resin	40 to 50
Fine dirt	1 to 3
Water	1 to 3

Even if the water content be lower originally, it eventually becomes constant at about 1.5 to 2% in a good insulation. The higher the water content, the poorer the electrical properties, and since the eventual content is dependent upon the concentration of the saline solution—which cannot be controlled—and upon the water soluble impurities in the insulation, the washing of these gums must be performed very carefully. The insulating material may be applied in the form of a tape, by wrapping it spirally on to the wire, or it may be extruded on to the wire. The latter method is preferred because it avoids the existence of seams—and consequent leaks. Since no vulcanization takes place, repairs are easily made with the simplest equipment, and the absence of sulphur eliminates the need of tinning to avoid corrosion of the copper. Because of the thermoplastic properties of these gums, no fillers are required to give them good extrusion properties.

In the manufacture of balata belting old belts can be utilized. Since the gum is not vulcanized, it can be recovered by solution in naphtha. In choosing the gum for belting, preference is shown for sheet balata although block and gutta percha (resinated) are also used. The gum is washed, dissolved in warm naphtha, allowed to settle, and is pumped into a reservoir above a spreader, heat being applied to reduce the viscosity of the solution. Extra-heavy cotton duck, previously dried to avoid trapping of moisture, is fed into the spreader and coated with the solution. Both sides are treated, one more heavily than the other. The duck is then run through a machine in which sharp knives cut it into the required widths, while blunt knives mark it on the heavily-coated side for folding. Air dried over hot coils, the belt becomes tacky, is folded to the proper thickness with the grooved side inside, and next is run through rolls which flatten the belt at the folds. It then is run between 2, 2-roll calenders or a 3-roll and a 2-roll calender, the second one traveling 5 to 15% faster than the first, and is compacted and stretched in the one operation. The rolls are kept warm to permit flow of the gum under pressure. After being cooled off, the belt is again passed between the calenders, this time with the rolls slightly separated, and is smoothed, and evened out. Passing through another 2-roll calender, it is given a ply of gum (usually compounded). The upper roll is kept warm. The belt is then trimmed and is run through engraving rolls.

For use in golf balls the balata is either deresinated or precipitated and then compounded to produce the degree of resilience and whiteness desired. Preformed into shells or cut into squares, it is fitted on to the ball

(Continued on page 34)

Photoelectric Relays

Application to Rubber Operations

ELECTRON tubes are being applied to many industrial uses in the apparatus known as a photoelectric relay. The theory and the characteristics of the photoelectric tube were discussed in a paper by W. R. King,¹ from which the following quotations are taken.

The applications and prospective uses of electron tube systems may be broadly divided into 2 general groups: those in which the electron tube devices perform operations for which no reasonably suitable apparatus of a conventional nature is available and those for which conventional apparatus already exists.

The photoelectric tube is described as a 2-element light sensitive device which depends for its operation on the emission of electrons from a light sensitive surface. The photoelectric relay has been applied as a safety device which will make machinery inoperative upon the interception of a beam of light, but difficulty is often encountered in covering the complete danger zone with this beam of light, the interception of which causes the photoelectric relay to operate. Certain machines have a very narrow danger zone, and, of course, in such cases there would seem to be no reason why a standard photoelectric relay may not be applied as a safety device.

Among the applications already made in the rubber industry are regulating the feed to a rubber cutting table, stopping a conveyer when a jam occurs, counting tire

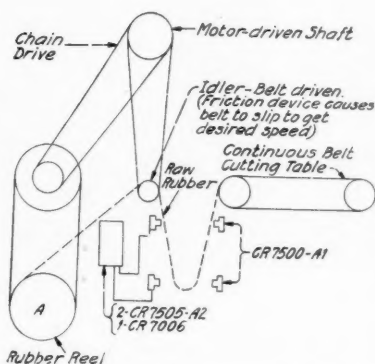


Fig. 1. Arrangement Controlling Rubber Feed

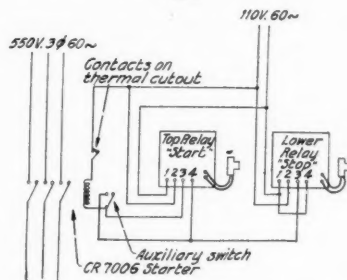


Fig. 2. Connections for Relays and Starter

casings, operating drinking fountains automatically, and controlling the speed of a motor driving a reeling machine for rubber belting. In the first instance the problem was controlling and stopping a motor, depending upon the amount of sag in a strip of rubber as it was fed from a roll to a continuous belt cutting table. The rubber was very thin, and the sag was limited between 1 foot and 3 feet. The control apparatus employed consisted of 2 photoelectric relays and 2 standard light sources together with transformers.

The arrangement of the rolls, feeds, etc., is shown in Figure 1. The rubber is unrolled from the large drum (A), which decreases in size as the rubber is used. The rubber is fed over an idler pulley and then over a cutting table where different shaped articles are cut out. The cutting table runs at a constant speed; however it may be stopped by the operator in case the work is piling up or for any other reason. It was desired to have the unrolling equipment controlled automatically.

The roll from which the rubber is being unwound is driven by a constant-speed motor through high-ratio reduction gears, the motor being rated 550 volts, 60 cycles, 3-phase. The speed of the drive is adjusted so as to give a little faster speed than is required when the roll is almost empty, which necessarily gives a higher speed than is required when the roll is full.

The 2 standard photoelectric relays are used in conjunction with a CR7006 magnetic starter, replacing the usual push-button station. One photoelectric relay acts as the start button, and the other as the stop button, which gives a positive start and stop position.

¹ Industrial Engineering Department, General Electric Co., Schenectady, N. Y. "Electron Tubes in Industry," paper presented at the winter convention of the A.I.E.E., New York, N. Y., January 26-30, 1931. Illustrations through the courtesy of General Electric.

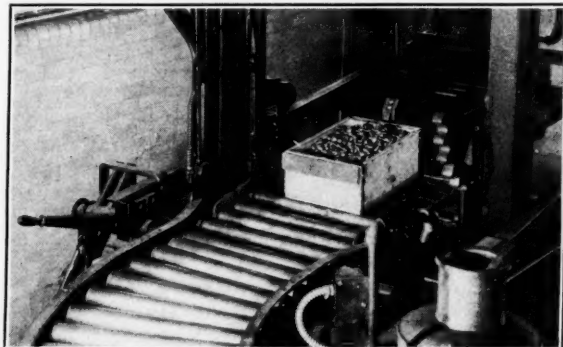


Fig. 3. Control of Vertical Lift

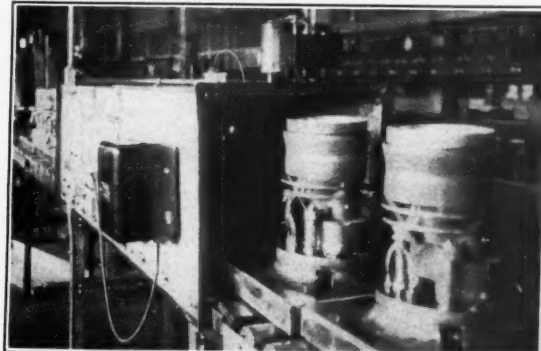


Fig. 4. Registering Count of Refrigerating Units

The operation is as follows. With the equipment running, as the rubber comes down past the upper light source, the upper photoelectric relay opens its contacts, which action is the same as releasing the start button. As the rubber continues down in the loop, it intercepts the light to the lower photoelectric relay; this action opens its contacts and is the same as depressing the stop button.

As the rubber is used up and light is admitted to the lower equipment, its contacts close; but the motor will not start until light is admitted to the upper equipment, which is again the start button.

Figure 2 shows how the CR7505-A2 photoelectric relays and the CR7006 starter are connected.

Photoelectric control is utilized, as pictured in Figure 3, to stop a vertical lift when a tote box intercepts the light beam. This action prevents

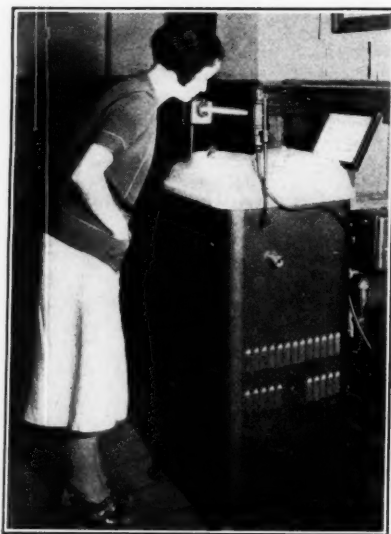


Fig. 5. Automatic Control of Water Cooler

piling up of the boxes. The light beam is placed at an angle to take care of all sizes of boxes.

Objects moved along by a conveying system can be counted as they intercept the light beam as by the arrangement for counting refrigerator units pictured in Figure 4. A similar arrangement can be applied for counting tires or any other class of rubber goods.

Control of the flow of water at a G-E water cooler is shown in Figure 5. Here the head of the person about to drink at the fountain intercepts the beam of light, causing the relay to operate the water outlet valve.

This modern method of checking production can be immensely useful in virtually every rubber plant for other uses that the above examples will suggest to the alert production engineer.

Resin-Gutta Gums

(Continued from page 32)

and molded at low steam pressures or in hot water. Since gutta changes from a crystalline to an amorphous form owing to the action of heat, and since the crystalline state is the desirable one in a golf ball, care must be taken both in the preparation of the gutta and in the handling of the cover stock during the compounding and the molding, to work at the lowest possible temperatures. Aging tends to bring about the crystalline state again, but the time required increases with the degree of working and heating of the stock, which, if carried too far, will hurt the stock permanently.

In addition to their application for dental and medical purposes, these gums are used to manufacture packing for equipment handling chemicals, for dinking and cutting surfaces for cutting leather, containers for corrosive acids, and "gutta tape" for hat and clothing manufacture.

In the preparation of gutta for golf ball and other uses where relatively pure gutta is required, a considerable amount of resin is accumulated. Balatas contain on the average about as much resin as gutta, but while the gutta is used, the resin usually goes to waste. Several uses have been found for it, and the waste is gradually being reduced. The resin has a low acid value of 5, that of colophony, ordinary rosin, is 180. It is used in varnishes, adding gloss and flex. In lacquers it is used to replace damar, and the ester gums used in conjunction with castor oil, and is used to offset the "blushing" tendencies of coumarone resin by partial or total substitution. A typical gutta-resin lacquer follows.

1. Solution mixture: benzol, 3 parts; toluol, 2 parts.
2. Solution mixture: ethyl acetate, 6 parts; butyl alcohol, 4 parts; butyl propionate, 3 parts; butyl acetate, 2 parts.
3. Solids: ($\frac{1}{2}$ sec.) dry pyroxylin, 1 part; (5 to 10 sec.) dry pyroxylin, 1 part; hard gutta percha resin, 2 parts.

Mix in the following proportions: 10 parts solution 1; $7\frac{1}{2}$ parts solution 2; 2 parts solids.

The gutta resins are good softeners for rubber and

leather and are ideal for belt dressing. A rather apt use for these resins is in the manufacture of golf ball centers where, compounded with rubber and pigments, they are employed either vulcanized or unvulcanized. Their adhesive properties are utilized in cements, in coating flypaper, etc.

Possibilities, Present and Future

The possibilities which these gums offer to the manufacturer are bound up largely in the manufactures of golf balls, belting, and chewing gum base (chicle substitute). To the rubber manufacturer who seeks additional products to add to his present lines, these 3 fields are available. To the manufacturer who seeks to improve some of his present products by imparting to them, either for practical operating reasons or for improvement of the finished product, those qualities or properties intrinsic to the resin-gutta gums, these materials offer unlimited possibilities. As has already been indicated, the gums are used mainly for the gutta present, and the present possibilities lie chiefly in such utilization. Many uses have already been found for the surplus resins, some of which have been mentioned above; and while the paint industry alone could easily absorb all the resin available, the real future possibilities lie in the discovery of new uses for these resins, especially such as cannot easily be substituted for by other available materials.

In passing it is well to call attention to one factor in this regard which must be considered. Since these resins are usually removed from the normal gum with the aid of naphthas, "heavy ends" are apt to be present, as are small proportions of gutta. The former can be avoided by using "sweet" (freshly redistilled) solvent, and the latter by cooling and filtering the resin solution carefully. In conclusion the author feels that while he does not expect every rubber manufacturer to take full advantage of the opportunities offered by the use of these gums, those who fail to take some advantage of them are, in the words which were so popular a few years ago, "overlooking a good bet."

Coloring Rubber

THE following abstracts conclude the informative review of United States patents on coloring rubber, from our November 1, 1933, issue.

35. Trobridge, 1,881,253, Oct. 4, 1932. Ornamented articles of rubber are formed by placing in the grooves of an embossed former a deposit of dispersed material of one color from an aqueous dispersion of rubber, drying the deposit, depositing a backing of rubber of different color from an aqueous dispersion thereof, drying the deposits, turning the deposit inside out, and vulcanizing.

36. Shew, 1,893,966, Jan. 10, 1933. White rubber products result from incorporating a pigment comprising a compound of titanium in a rubber composition, vulcanizing the composition, and bleaching it with a reagent.

Titanium oxide or other compound of titanium such as titanium-calcium pigment, the composition of which is approximately 30% of titanium oxide and 70% of calcium sulphate, or the compound of titanium oxide and barium sulphate, the composition of which is approximately 25% of titanium oxide and 75% of barium sulphate, is incorporated with rubber in the usual manner on a mill or internal mixer, together with (1) enough sulphur to produce a rubber of the desired hardness when properly vulcanized; (2) either an organic or inorganic accelerator of vulcanization and, in the case of organic accelerators requiring zinc oxide or other metallic oxides for their activation, the necessary quantities of zinc oxide or such other metallic oxides as are essential; (3) such quantities of stearic acid or other softener as are needed for proper consistency in the rubber mix for operations such as tubing, calendering, etc.

A small quantity of ultramarine blue helps produce clear shades of white. The vulcanized product is bleached with a reagent such as a solution of hypochlorous acid, chlorine water, or a solution of sodium or potassium hypochlorite. The preferred method is to treat the vulcanized product with a solution of hypochlorous acid by immersing it in the acid solution for some time. By this treatment the surface of the product is changed from a light yellow or cream color to a white, the shade depending upon the time of immersion in the solution and the quantity of the white pigment used in the formula. The time required to produce a good white surface depends upon the concentration of the solution, varying from one hour or less to 12 hours or more, for very dilute solutions. By this treatment it is possible to produce a hard rubber having a brilliant white surface.

37. Taylor, 1,895,088, Jan. 24, 1933. An example of one embodiment of this invention follows. A rubber compound is prepared containing approximately 100 parts by weight of rubber, 50 parts whiting (about 15% by volume), 5 parts zinc oxide, 3 parts sulphur, 1/2-part organic accelerator, and, if a soft stock is desired, from 5 to 10 parts of a light-colored neutral mineral oil. After a thorough mixing and mastication the compound is calendered to a suitable thickness for the articles to be manufactured. Blanks of the calendered stock are then molded and vulcanized, say in the form of bathing caps. At this stage the caps are all of a somewhat translucent white color and are completely manufactured except that the color is lacking.

Solutions of oil-soluble dyes of various colors in xylene in a concentration of 5 to 10% are prepared. One group of bathing caps is dipped bodily into the dye solutions, drained, and allowed to dry to give solid colors. If no one of the dyes represents the exact shade of color desired, 2 or more dyes may be mixed or the caps may be dipped successively in several dye solutions. In the course of one or 2 days the migration of the dye is substantially complete, and the color is uniform throughout the mass of rubber.

Another group of caps is colored by covering portions of the rubber with stencils or masks and painting or spraying dye solutions on the exposed areas. After a short time, when the first dye solution is substantially absorbed by the rubber, a different stencil or mask may be applied, and a different dye solution is applied in the same manner. If the areas covered by the 2 dyes overlap, 3 colors are obtained with only 2 dyes, the overlapping area presenting the composite color of the 2 dyes. If desired, a ground color may be imparted to the rubber by dipping in another dye, either before or after the treatment described above. The variety of patterns and color combinations obtainable is practically endless, being limited only by the ingenuity and skill of the operator.

Mottled effects may be obtained by applying irregular blotches of various dye solutions to the rubber.

The method of this invention is advantageous in that it permits the rubber goods manufacturer to mix, handle, shape, and even vulcanize a single, colorless base stock and to color individual articles made from this stock with a large number of different colors, either in solid colors or in an innumerable variety of patterns, and even permits him to color the individual parts of the same article with any number of different hues.

38. Krech, Scheurer, and Koch, 1,897,129, Feb. 14, 1933. The following are some of the examples given. Example 1: A rubber mixture is prepared from 100 parts of crepe rubber, 160 parts of calcium carbonate, 50 parts of kaolin, 2.5 parts of petrolatum, 5 parts of zinc white, 0.15-part of diphenyl-guanidine, 1 part of mercaptobenzothiazol disulphide, 1.5 parts of stearic acid, 3 parts of sulphur, and 3 parts of the azo dyestuff obtainable by coupling 1 molecular proportion of tetrazotized 3,3'-dichlor-4,4'-diaminodiphenyl with 2 molecular proportions of acetoacetic acid *m*-xylydine. The mixture is vulcanized for 12 minutes at a steam pressure of 3 1/2 atmospheres. The resulting bright yellow vulcanizate may serve as a floor covering.

Example 2: A mixture is prepared from 100 parts of crepe rubber, 2.5 parts of sulphur, 0.35-part of thiuram, 5 parts of zinc white, 0.6-part of ozocerite, 0.5-part of stearic acid, and 2 parts of the azo dyestuff obtainable by coupling 1 molecular proportion of tetrazotized 3,3'-dichlor-4,4'-diaminodiphenyl with 2 molecular proportions of acetoacetic acid anilide. The mass is vulcanized for 15 minutes at a pressure of 2 atmospheres. The resulting product, a beautiful yellow, may be used for bathing caps.

39. Sullivan, 1,903,578, Apr. 11, 1933. A rubber color intermediate such as Victoria blue base is intimately mixed with an equal quantity of rubber. Next is taken a color intermediate complementary to the color in-

intermediate above mentioned, which complementary color intermediate is phospho-tungstic acid, $P_2O_5 \cdot 12WO_3 \cdot 42H_2O$ in the case of Victoria blue, or one to form a salt or ester acid producing an insoluble toner by intermediate condensation. This is then intimately mixed with an equal quantity of rubber. The 2 batches thus prepared are now mixed intimately, and this mixing causes the resultant pigment to be precipitated in a state of colloidal dispersion, each particle being surrounded by a protective coating of rubber which thus prevents agglomeration and consequent inequality of tone. This composition is sheeted and dried on an ordinary rubber sheeting mill and is then ready for use in the manufacture of rubber goods, being mixed with the rubber from which such goods are to be manufactured in sufficient quantity to produce the required shade.

A second manner of carrying out the process follows. One part of rubber color, either dry or in pulp form (figured on a dry basis), is mixed thoroughly with water to form a light slurry, a trace of casein or other protective colloid being added in the case of pigments which tend to agglomerate. This slurry is then mixed with one part of latex, dispersed rubber, or other aqueous solution of rubber (figured on a dry basis). Next the mixture is agitated and ground to impalpable fineness in any suitable form of wet grinder and is dried. Finally the dried mass, sheeted on a rubber mill, is ready for use as above.

40. Orthner and Glietenberg, 1,907,156, May 2, 1933. Colored rubber goods are obtained by incorporating with rubber aluminum lakes of hydroxy- or hydroxy-amino-anthraquinone-sulphonic acids containing at least 2 hydroxy groups or at least one hydroxy- and one amino- or alkylamino group in para-position to one another.

The aluminum lakes can be prepared, for example, by dissolving the hydroxy-anthraquinone-sulphonic acid derivative in water and precipitating the aluminum lake by adding aluminum-hydroxide; or by dissolving the sulphonic acid, from which the lake is to be produced in water in the presence of aluminum sulphate and precipitating the lake by sodium carbonate.

The following example is given. Mixtures of the following composition are vulcanized for 15 minutes at 2 atmospheres pressure:

	Parts by Weight
Crepe	100
Zinc oxide	5
Lithopone	5
Sulphur	2.5
Tetramethyl-thiuram-disulphide	0.35
Pigment	2

When the aluminum lake of 1.4-dihydroxy-anthraquinone-6-sulphonic acid or of 1.4-dihydroxy-anthraquinone-2-sulphonic acid is used as the pigment, bluish-red colorations result. The aluminum lake of 1.4-dihydroxy-anthraquinone-2.6-disulphonic acid yields a reddish-violet coloration; the aluminum lakes of 1.4-2-triphenylhydroxy-anthraquinone-2.6-disulphonic acid or of 1.5-diamino-4.8-dihydroxy-anthraquinone-3.7-disulphonic acid or of 1.5-dimethyl-amino-4.8-dihydroxy-anthraquinone-3.7-disulphonic acid yield brilliant blue colorations. The aluminum lake of purpurin 3-sulphonic acid also gives satisfactory results. By using blue aluminum lakes in admixture with suitable yellow pigments, green colored rubber goods are obtained.

41. Girk, 1,908,747, May 16, 1933. A white-blue marbled sponge rubber or a white sponge with blue grainings is produced as follows. There are employed as raw material: a rubber mixture comprising 50 parts by weight of raw rubber, 6 parts by weight of castor oil, 2 parts by weight of sulphur, 15 parts by weight chalk, 10 parts by weight zinc white, a white mass of 17 parts by weight of lithopone and a blue mass of 16 parts by weight of

heavy spar and 1 part by weight of blue coloring matter; ½-part by weight of an accelerating agent. Then follows the addition of the raising and softening agents: for 10 kg. white mass are the following aerating agents: 600 g. alcohol 90%, 900 g. of a solution of ammonium carbonate as softening agent, 20 g. amyl acetate, and 180 g. benzene. For 10 kg. blue mass are the following aerating agents: 480 g. alcohol, 720 g. of a solution of ammonium carbonate as softening agent, 50 g. amyl acetate, and 450 g. benzene. The masses thus prepared are drawn out into sheets, the white mass to a thickness of about 6 mm., but the blue to a thickness of 1.5 to 2 mm. Four of such sheets are superposed and rolled, then twisted by hand or mechanically, and again rolled out into strips.

42. Dorn, 1,911,176, May 30, 1933. The method of coloring vulcanized rubber balloons to produce irregular artistic color effects consists in treating the balloons with a caustic alkaline solution, assembling a plurality of the balloons so treated in an irregularly crumpled condition in a perforated container, and, while so maintained, applying oil soluble dyes in solution with naphtha successively. Experiments showed that by dipping the articles first into yellow, then in red, and then blue the best results are produced inasmuch as the darker colors will show up over the yellow; while the yellow, if applied after the application of the darker colors, does not appear so prominently on the resultant article.

43. James and Twiss, 1,912,641, June 6, 1933. This invention relates to a method for coloring articles obtained, by any one or more of the operations such as dipping, spreading, painting, extruding, spraying, electrophoresis, impregnating or molding, from aqueous dispersions of rubber, the individual particles of which normally possess electro-negative charges by admixing therewith soluble basic organic dyestuffs, the colored ions of which are cations.

Dyestuffs having colored cations comprise the triphenyl-methane derivatives, as for example, malachite green or methyl violet, crystal violet, and such sulphur containing dyes as, for example, methylene blue and also the basic phthalein dyestuffs such as Rhodamine B.

Examples of the invention follow. Example 1: An acid latex dispersion of the following composition:

	Parts by Weight
Rubber	46
Acetic acid	32
Casein	0.93
Water	130

is prepared by wetting casein with 10 times its weight of warm water (50° C.) and adding ammonia little by little with constant stirring until an opalescent colloidal solution is formed, then adding an equal volume of water and mixing the solution with the required amount of latex together with sufficient water to give a final rubber content of 30%. The original alkalinity of the latex should be reduced to give a low alkalinity in the final casein latex mixture, e.g. 0.01 or less expressed as ammonia on the total volume.

A solution consisting of the stated proportion of acetic acid mixture with half its volume of water is then added as rapidly as possible to the casein latex dispersion with continuous stirring. The acid latex so obtained is strained through muslin gauze. To 100 parts of the latex so obtained 1 part of crystalline methyl violet dissolved in a little 20% acetic acid is stirred in. On subjecting such violet colored acid dispersions to electrophoresis non-porous violet colored articles of rubber result.

Example 2: A shaped form or mold is dipped into a violet colored acid dispersion obtained as described in Example 1. On withdrawing the form and with or with-

out allowing the acid coating partially to dry, the form can then be dipped into a normal compounded latex mixing containing, for example, 60% total solids of the following composition:

	Parts by Weight
Rubber	91.7
Sulphur	2.5
Accelerator	0.3
Zinc oxide	0.5
Mineral oil	5.0

The form is allowed to remain immersed in this mixing for 5 to 20 seconds, according to the thickness of the deposit desired. It is then withdrawn, inverted, and allowed to stand. Within 30 to 60 seconds after removal the deposit sets throughout, and upon subsequent drying and vulcanization a violet colored rubber article results.

If desired, a deeper coloring can be obtained if after withdrawal from the normal mixing the form is again dipped into the color containing acid dispersion before final drying and vulcanization. By continued alternate dipping of the form into the 2 dispersions a violet colored article of appreciable thickness can be built up, which after final drying and vulcanization will be found colored throughout.

44. Hauser, 1,912,939, June 6, 1933. This invention relates to a process for making washing-proof dyeings of products manufactured from aqueous rubber dispersions. The following examples are given. Example 1: 100 g. of crepe rubber are intimately mixed on the rolls with 50 g. of du Pont rubber red RL (powder). The mixture thus obtained is dispersed in 700 g. of benzol, to which had been added 22 g. of ox gall (reckoned as dry substance). Twenty g. of this dispersion are then added to a mixture consisting of 130 g. of a concentrated rubber latex containing 75% total solids (such as Revertex), 4 g. of ZnO, 2 g. of sulphur, 1 g. of the accelerator Thionex (tetramethyl thiurammonosulphide). The resulting mixture is then ready for use, for example, as coating composition.

Example 2: A mixture obtained by incorporating on the masticator 50 g. of ultramarine into 50 g. of crepe rubber is dispersed in 900 g. of paraffin oil. Thirty-five g. of this dispersion are then added to the following mixture: 130 g. of a concentrated rubber latex containing 75% total solids, 2 g. of ZnO, 1 g. of sulphur, 1 g. of accelerator 833 (aldehyde-amine). With the resulting mixture coatings, toys, bathing caps, etc., which are washing-proof, can be produced.

45. Van Heurn, 1,913,014, June 6, 1933. According to this invention fibrous materials serve as a vehicle for introducing coloring matters into rubber. The following example is given: Ten kg. of kapok fiber are introduced into 600 l. of rubber latex of 20%. The mixture is coagulated by acetic or formic acid in the presence of bisulphite, and the coagulum is worked up into blanket, sole crepe, or any other shape of crepe. The rubber is then placed into an aqueous solution of the desired coloring matter and allowed to remain therein until the coloring matter has sufficiently permeated the material. The rubber is then removed, rinsed with water to remove any superfluous dyestuff, and dried.

46. Lane, 1,915,828, June 27, 1933. Mottled effects are produced on rubber articles before or after vulcanization as follows. A dispersion of rubber solution is prepared by adding naphtha or benzole solution of a suitably colored rubber as, for instance, rubber colored with such inorganic pigments as cadmium sulphide or vermilion to a 1.5% aqueous solution of ammonium oleate to give a concentration of approximately 5% rubber solution containing, for instance, 10% of rubber and 2% of pigment in the dispersion. A short vigorous stirring

of approximately 30 sec. breaks down the rubber solution into particles ranging from 0.1- to 4-mm. in diameter. This dispersion is very coarse and needs agitation to prevent separation. The article to be provided with a mottled effect is dipped into this agitated dispersion and removed when it is found that precipitation of the particles has occurred thereon to produce the mottled effect.

Rubber Cutting Knives

(Continued from page 29)

The pointed short blade already mentioned is favored by mill men in mixing and warming rubber batches. This form permits the mill man to present the cutting edge to the stock on the roll with either a back or a front hand grip according to which is more convenient.

Narrow extension blades like that shown in Figure 2 are used for back hand cutting of plied up fabric from which shapes are cut with a metal template as guide. The blade is held in a special clamping handle, Figure 3, which holds the blade securely until it is worn down in service beyond further value for cutting. Such blades are obtainable with sharp points, beveled or curved, and in widths from $\frac{1}{8}$ - to $\frac{7}{16}$ -inch. Blades of this sort are favored by rubber upper cutters and by those who cut bevel-edge soles for rubber shoes as was the case before such work was done by machines.

The third method of cutting used by rubber workers is by pushing a bevel V-notch in the end of a short blade, shown in Figures 4 and 5, against the edge of the material to be cut as in tire work where close trimming of a ply may be required or in tire bead application. Other V-trimming blades are off-set or curved to facilitate their use. Various other blade notchings are used for close cutting operations in tire making.

Rings are frequently cut on a lathe by a push knife with short blade ground with an angle cutting edge on the end. The thickness of the ring, that is to say, the interval of the cuts, is gaged by slots in a bar located parallel and close to the stock as it revolves on the lathe centers. A knife ground like that shown in Figure 6 is suited to this work. The operator pushes the blade into the revolving stock, thus severing it into rings as the blade passes over the mandrel.

Sheet stock is often cut in strips at the calender roll commonly by bevel-ground pointed blades resembling extension knife blades notched or perforated for adjustment to cutting position against the calender roll.

Distributors' Tire Stocks

(Continued from page 30)

The statement is to be regarded as a sample of how such estimates may be made, not necessarily as accurate.

INDUSTRY INVENTORY OF AUTOMOBILE CASINGS

	October 1, 1931	October 1, 1932	October 1, 1933
Independent dealers	4,214,000	4,991,000	4,291,000
Mass distributors	2,300,000	2,450,000	2,473,000
Manufacturers	6,527,000	4,877,000	6,038,000
	13,041,000	12,318,000	12,802,000

The April 1, 1933, industry inventory comparable to the above indicated 4,536,000 casings held by dealers, 1,815,000 held by mass distributors, and 5,832,000 held by manufacturers, a total of 12,183,000. It therefore appears that manufacturers' and mass distributors' stocks have increased since April; while dealers' stocks have declined.

EDITORIALS

How Large Is Potential Rubber Production?

STATEMENTS about the enormous potential producing capacity of rubber plantations, rather than actual or possible immediate production, constitute a needless occasion for alarm among British proponents of restriction for that industry. Heading the alarmists at the present time is H. Eric Miller, prominent rubber producer, who foresees a production of 1,000,000 tons annually at current price levels, unless regulatory measures are adopted by the governments involved.¹

Apparently *The Journal of Commerce* considers that a potential over 1,000,000 tons per annum, even if possible, is so far above what may actually be expected from the plantations that it is not worth troubling about, and discussion would only lead to measures that would endanger supplies and force the price up again to \$1.21 a pound as under the Stevenson Restriction Act. If our contemporary wishes to prevent this, then it must refrain from trying to work up a scarcity scare. It was largely the employment of shortage scare talk by interested parties that sent prices up to \$1.21 in 1925-1926 and not an actual lack of rubber. The shortage existed chiefly in the imagination of speculators as the statistical position at the time and since amply proves. Statistics, if they are worth anything, indicate that there is no cause to fear a shortage at the present time even if some form of restriction were introduced. But, with restriction nearer than it has been for a long time, a scarcity scare today would have the same effect it had in 1925-1926.

To be sure, world's exports of rubber during 1932 came to only 707,949 tons, but this output was not normal, but the result of a prolonged and unprecedented slump period. After all, it is worth recalling that in 1929, 4 years ago, net exports of crude rubber were 862,900 tons, and over the period 1929-1931, the annual exports averaged well over 800,000 tons. In the 4 years since 1929 large areas have reached maturity or will do so before long; while the production of the younger mature areas of 1929 must in the meantime have reached full capacity by now. Besides many estates have stopped tapping altogether; while others have closed in part, the total untapped area on Netherlands East Indies and Malayan estates having for a more or less prolonged period ranged between 500,000 to 550,000 acres. The rested areas will undoubtedly give flush yields; and while a certain part of the acreage undoubtedly consists of the poorer sections of the estates, still when all these are tapped again, the increase in output must be substantial. And what is true of the 2 rubber centers mentioned applies to all the other countries producing plantation rubber except Indo-China.

So that considering the natural increase to be expected from estates as younger areas grow older, plus the resumption of tapping on the estates that have been closed

down, there seems to be no reason to doubt that an increased output of at least 100,000 tons over that of 1929 is now possible. We do not need to figure on 350,000 potential from the Dutch natives to get this increase either. In fact on the basis of the above calculation they need only to increase their 1929 output by 40,000 tons, and the 1,000,000 tons would be there.

The Journal of Commerce points out that most of the increased production is expected from natives in the Dutch East Indies and does not see why this should be so. Well, it may not generally be known that their planted area practically equals that of the total for estate in Malaya; some say it is even greater. To be sure natives produced only some 60,000 tons of rubber in 1932. But for the 4 months May-August, 1933, they have shipped between 13,000 and 16,000 tons a month, that is at the rate of about 175,000 tons a year, or half their potential, which, by the way, is generally accepted as 350,000 tons.

Owing to the slump native shipments contracted to about 60,000 tons; and now that prices are picking up, the natives are hurrying to get as much rubber on the market as they can, for as long as the price holds, and before we know it, we shall have at least 100,000 tons per annum more on the market from that source than we had in 1932; and while 160,000 or even 175,000 tons is admittedly a long way off from 350,000 tons, yet it will be quite enough to help bring the export figure to the debated 1,000,000 tons. Of course if the natives are in a position to produce at the rate of 13,000 to 16,000 tons per month for 4 months, there is no reason to expect that they will not continue to do so provided the price level continues profitable.

It is usual at this point to bring in the question of labor on native holdings. The amount of rubber produced does not depend primarily on labor. There are other points to be considered, and one of the most important is that the native does not usually ship his rubber to consumers direct. He sells to the Chinese dealer who in turn sells to the Chinese remiller in Singapore where the native rubber is reconditioned before it is finally exported to the consuming countries. So the position of the Chinese dealers and remillers must be considered. For a long time the latter have made very little, if any profit; many have failed during the slump, and most of the factories have been closed. Now prices have improved; so all are out to benefit as much as possible not only to supply actual increased demand but for speculative purposes, for the Chinese is a confirmed gambler. Therefore if buying up native rubber continues to look like a good proposition to the Chinese remiller and dealer, native production will be further encouraged. The rubber trees are there—1,800,000 acres of them—and means to tap them will be found if adequate profit is in sight. The 1,000,000 tons potential may prove to be a conservative estimate; for there are authorities who talk of 1,350,000 tons.

¹ *The Journal of Commerce*, New York, N. Y.

What the Rubber Chemists Are Doing

A. C. S. Rubber Division Meetings

Boston Group

THE fall meeting of the Boston Group, Rubber Division, American Chemical Society, held November 3, 1933, at the University Club, Boston, Mass., was attended by about 100 members and guests. The 2 papers on the program are here reported in outline.

The Search for Fillers

R. B. Ladoo, formerly of the U. S. Bureau of Mines, reported 40 mineral and 15 or 20 by-product and manufactured materials used as fillers by industry.

Different natural deposits of the same mineral do not always yield material of identical properties. This fact should be considered when judging the suitability of a mineral type filler. Absence of specifications fosters misunderstandings and deception particularly with regard to the matter of mesh. The chances for new fillers are: (1) the same type may be available near the plant; (2) improvement of present materials to secure better value for the price; and (3) new materials of greater economy.

Problems and Opportunities of Rubber Technologists

R. P. Dinsmore, assistant to the factory manager, Goodyear Tire & Rubber Co., Akron, O., discussed the effect of the depression with respect to the rubber industry business recovery. Toward their employers rubber technical men should fully appreciate the function and importance of factory technical work as to what it may do for quality, cost, and maintenance of a company's future position. They should be alert to the possibilities of developing new products to fill unsatisfied human needs.

Toward the industry rubber technologists should set standards for materials and products, strive for unity of fundamental practice, and by making research results generally available by publication aid in building up a coherent fund of basic information.

"Our industry is a factor in transportation, industrial supplies, shoes, clothing, druggists' sundries, toys, and novelties. In this wide variety of uses serviceability, appearance, cost, and adaptability to changing conditions are factors which must be accounted for in holding and improving our position. Failure to meet conditions is likely to

impose the penalty of absorption by other industries on the one hand and displacement of rubber by other materials on the other. Thus we have common interests to uphold and our success in this direction will be largely determined by our recognition of the basic needs of the industry and our willingness to contribute our share to that end."

The author urged that rubber technologists conduct their activities upon a high plane to merit the right of rubber technology to be classed as a profession, admonishing the technologists to be jealous of its good name and to set high standards for their professional activities.

Akron Group

THE fall meeting of the Akron Group, Rubber Division, A. C. S., was held on the evening of November 13, at the Akron City Club, Akron, O. After the dinner, H. A. Bourne, chairman of the Group, introduced A. L. Freedlander, vice president and factory manager of the Dayton Rubber Co., Dayton, O., who gave a very interesting talk, illustrated by moving pictures, of a trip he made from Miami, Fla., by a Sikorsky flying boat to Pernambuco, Brazil, thence across the Atlantic Ocean by the *Graf-Zeppelin* to Friedrichshafen, Germany. There were about 200 members and guests present.

Chicago Group

THE Chicago Group, Rubber Division, A. C. S., held its first meeting of the 1933-34 season on November 17 in the College Inn of Hotel Sherman, Chicago, Ill. Following the usual dinner the chemists and their guests listened with much interest to the technical program.

J. Kirschner, chairman of the Chicago Group, introduced S. Collier, chief chemist, Johns-Manville Corp., Waukegan, Ill., who presented a paper on "Asbestos and Its Use in the Manufacture of Rubber Goods;" and W. P. Bauer, managing director of the Lawyers Legislative League discussed "The Benefit of a Code to the Rubber Industry" in a way that stimulated much interest on the part of his audience.

Walter Grote, of the United Carbon Co., Charleston, W. Va., performed several tricks which he then explained.

Benjamin Felix, president of the Featheredge Rubber Co., Chicago, gave

his interpretation of the benefit of a code to the rubber industry.

New York Group

THE New York Group, Rubber Division, American Chemical Society, will hold its next meeting on December 15, at the clubrooms of the Building Trades Employers' Association, 2 Park Ave., New York, N. Y. "Use of Factice in Rubber Compounding," by Kingsley Gillespie, of Stamford Rubber Supply Co., Stamford, Conn.; and "Recent Developments in Soviet Chemical Industry," by Dr. Theodore M. Switz, chemical economist, will comprise the technical program. This will be followed by an entertainment, contests, and drawing of prizes. Dinner tickets at \$2 per plate may be reserved by addressing Secretary Peter Pinto, 250 W. 57th St., New York, N. Y., or at the door.

The Nominating Committee nominated the following officers of the New York Group for the ensuing year to be elected at the December meeting.

Chairman, Carl J. Wright, General Atlas Carbon Co.; secretary-treasurer, Bruce Silver, New Jersey Zinc Co.; executive committee, Wm. Tuley, United States Rubber Co.; W. T. White, Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.; A. R. Kemp, Bell Telephone Laboratories; Emil Schwartz, General Electric Co.; Peter P. Murawski, E. I. du Pont de Nemours & Co., Inc.; L. A. Edland, R. T. Vanderbilt Co., Inc.; Peter P. Pinto, *Rubber Age*; William M. Morse, *INDIA RUBBER WORLD*.

Rubprotex

Rubprotex 100 is rubber paint for the protection of metal surfaces against corrosion in many forms, resisting, as it does, the attacks of fumes, alkaline solutions, moisture, and electrolytic corrosion. It is recommended as a protective coating for structural steel, bridges, underground conduits, tanks, exposed steam pipes, inside and outside smoke and fume stacks and miscellaneous plant equipment. It does not harden, crack, or become brittle under atmospheric conditions. At temperatures of 212 to 350° F. it softens slightly and resumes its usual appearance upon cooling. At 350 to 500° F. it hardens permanently, but remains flexible and can be applied by brush, spray, or dipping.

Volumetric Determination of Free Sulphur in Rubber¹

J. A. Robertson and J. Young

THE determination of free sulphur is probably the analytical process most frequently carried out in the chemical laboratory of a rubber factory, and it would be even more often used could it be more quickly performed.

For the oxidation of the sulphur contained in the acetone extract from rubber, a rapid method was described² which was used in these laboratories for several years with complete success, but the sulphate produced had to be determined gravimetrically, and the process was too slow for use in factory control work. The acetone extraction of the rubber samples can usually be carried out at night on a bath with automatic time control, and, if a rapid method for the determination of sulphur in the extract were available, the results of the analysis could be ready early next day. From a review of the literature the volumetric determination of sulphate by rhodizonate³ appeared to be promising and on trial has given satisfactory results.

Method

Approximately 1 g. of the finely divided sample is extracted with boiling acetone for 6 hours. The acetone solu-

tion is transferred to a 300-cc. Kjeldahl flask of Jena glass, and the solvent removed by distillation. The extract is dried at 90° and covered with 10 cc. of fuming nitric acid (*d* 1.50), 5 cc. of perchloric acid (*d* 1.54), and 0.5 cc. of bromine. For routine work the nitric and perchloric acids are very easily handled in automatic measuring apparatus. The flask and its contents are then warmed gently for 30 minutes and finally boiled for 15 minutes to complete the dissolution of the extract; no "trothing" occurs when the oxidation is ended, as in the determination of total sulphur, but 15 minutes' boiling is sufficient to insure completion of the action.

The contents of the flask and rinsings are transferred to a basin and evaporated to dryness with approximately 1 g. of sodium chloride. The residue is drenched with concentrated hydrochloric acid, again evaporated to dryness, and baked for a few minutes, after which it is taken up with 200 cc. of water and 1 cc. of *N*-hydrochloric acid and heated to boiling. Twenty-five cc. of standard 0.02*N*-barium chloride solution are gradually added from an automatic pipette, a drop of the liquid being tested, to insure that there is an excess of barium chloride, by spotting on a prepared sodium rhodizonate paper. The latter is prepared by adding a drop of sodium rhodizonate solu-

tion (0.01 g. of sodium rhodizonate in 5 cc. of water) to a filter-paper moistened with water, and placing the paper for about half a minute over the mouth of a flask containing a little concentrated ammonia solution (1 cc. of 0.88 ammonia in 1 cc. of water). A solution of sodium rhodizonate is not very stable and is best made up every day. An excess of barium ion is indicated by a red stain.

The liquid containing an excess of barium chloride is titrated with standard 0.02*N*-sodium sulphate and, when near the end-point, is boiled for 2 minutes. In calculating the results it is usually necessary to make a deduction for sulphur present in the reagents, and the solutions are most easily standardized by determining, gravimetrically, the sulphate present in the sodium sulphate solution.

The following are typical results obtained.

Sample	FREE SULPHUR	
	Volumetrically	Gravimetrically
	%	%
1	0.25	0.26
2	0.52	0.52
3	0.48	0.43
4	0.07	0.05
5	0.21	0.17
6	0.41	0.46

The authors wish to thank the management of the North British Rubber Co., Ltd., for permission to publish this work, which was carried out in its laboratories.

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(Continued on page 56)

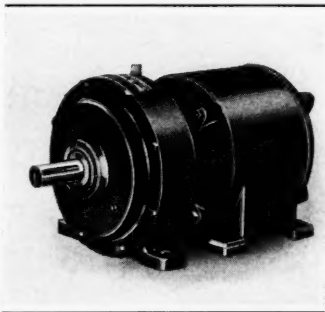
New Machines and Appliances

Speed Reducer

THE need of speed reducers is almost universal wherever a reduction from the original speed of the motor is required. A reducer replaces the old type of chain, belts, or a train of gears which are cumbersome, costly, and inefficient; while the speed reducer is a small compact and efficient unit reducing the motor speed to ultimate speed desired for the driven machine. Reducers are made in horizontal, vertical, and right-angle drives.

These reducers are furnished as an integral unit complete with motor. They can also be mounted on any make of motor supplied by the customer. In all cases standard motor shafts are used so that in the event of motor failure it is only necessary to replace the motor with one of the same make and size.

The gear cage and the slow-speed shaft are constructed in one part



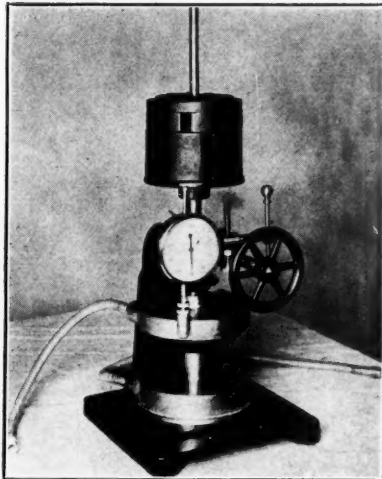
Type "A" Planetary Reducer

mounted on ball bearings. The planet gears are made of Bakelite with extra-wide faces for noiseless operation and long life, running in a continuous bath of oil. Patented oil seals prevent oil from leaking into the motor or the outside of the casing. Davis & Thompson Co., 6619 W. Mitchell St., Milwaukee, Wis.

Plastometer

THE instrument pictured has been developed as a practical tool for use in the mill room for control purposes. Its design, thoroughly mechanical, combines new features which solve the problem of control through plasticity. No temperature controlled oven or other accessories are needed, except a timing device, and no definite size of specimen is required for the test.

The platens of this plasticity press are hollow cavities arranged so that they may be heated or cooled by circulation of steam, hot water, brine, or other desirable or available media. The lower plate is arranged with a plug 1



Scott Low Pressure Plastometer

inch high, 1 inch in area. This plug is hollow, the same as the rest of the lower plate and so arranged that all the circulation must pass through this part. The upper plate is a flat surface and is attached to a spindle slideably mounted in a heavy cast-iron frame, and by means of a sector gear attached to the hand wheel shaft, it may be raised or lowered.

A weight holder is on top of this spindle upon which loose weights of the conventional scale type are placed. This feature of the apparatus has a distinct advantage over other forms as the pressure can be varied to meet any condition.

Two stops are arranged: one to hold the plates at the maximum point of separation, the second to hold them separated at any predetermined distance. A gage of the highest quality is provided and arranged so as to read 0 when the plates are together and to give micrometer measurements of the entire movement of the spindle.

Another plastometer is arranged to apply loads of from 0 to 100 pounds upon the specimen. It is provided with plates of the same pattern as are used on the plastometer described for smaller pressures. The application of the load is through a single beam graduated 0 to 20 pounds, with weights to be added to increase this load. The construction is such that it is not advisable to apply more than 100 pounds maximum spindle load on this model. Henry L. Scott Co., Providence, R. I.

Bias Cutter Feed

THE attachment pictured is attached to a vertical bias cutter. This new device increases the accuracy and per-

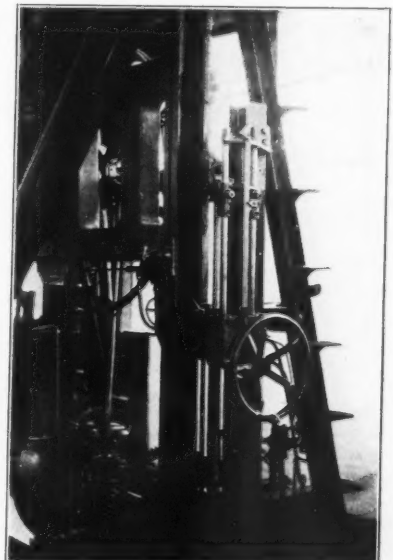
mits both continuous and selective cutting with a quick method of changing the width of plies without retarding the speed of the machine. To change the width of ply being cut the operator merely turns the hand wheel, which moves the indicator on the scale. For continuous cutting the indicator is set at a given point, and the machine cuts accordingly. For selective cutting the indicator is moved after each cut to any other graduation, without stopping the machine, and each ply is of a different width.

A slight turn of the hand wheel moves the indicator over a wide range of scale graduations; so plenty of time is allowed the operator between cuts to change widths from one reading to another.

The Hydro-Feed is a complete self-contained unit and can be applied to either a rack or segment drive machine. All its parts are attached to the bias cutter, and no additional floor space is required. It is simple in design and easily installed. In operation it gives greater cutting flexibility, and adapts the vertical bias cutter for continuous production or direct fabrication methods of tire building. Spadone Machine Co., Inc., 122 E. 25th St., New York, N. Y.

Texsteel Sheave

A SHEAVE of grid type construction designed for Texrope V-belt drives is shown in the illustration. It is formed of heavy gage steel sections



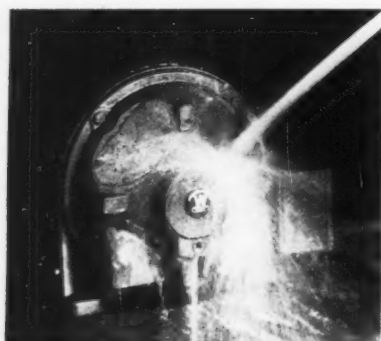
Hydro-Feed for Vertical Bias Cutter

electrically welded at web and rim. Outer rims are rolled for protection, good appearance, and strength. Integral bushings or solid bored hubs are standard. These sheaves are aluminum finished, well balanced, light in weight, and practically indestructible.

Texsteel Texrope drives are particularly economical where large numbers of V-belt drives are required or as standard equipment for machinery manufacturers. Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Splash- and Drip-Proof Drives

A NEW, complete line of splash- and drip-proof motors and control for every machine requirement is especially suited to the requirements where splashing occurs and invaluable wherever water should be guarded against for the most dependable and economi-



Westinghouse Splash- and Drip-Proof Motor

cal operation of electrical equipment.

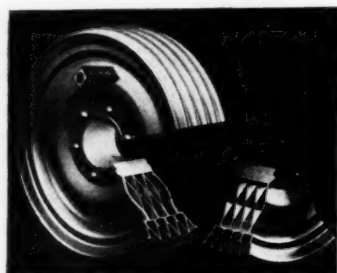
Several distinctive features characterize the splash-proof line as follows: increased plant efficiency, cover and baffle protection, dual protected windings, cool operation, and splash-proof conduit box. Either sleeve or ball bearings are standard on these motors and mounting dimensions are the same as the standard open motors. Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Holdfast Batch Roller or Shell

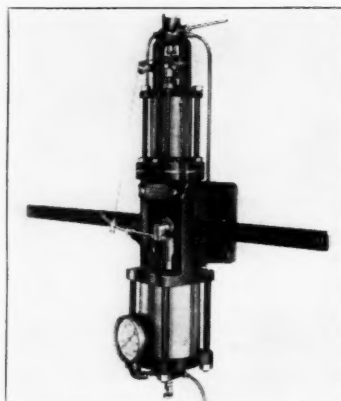
A PATENTED batch roller or calender shell of English manufacture is shown in the illustration. It is made from selected clear Columbian pine free from all defects with square hole cut through solid timber. The ends are capped with special steel pressings 4 inches in diameter and improved center portion fitting up to the internal diameter of the pressing, making practically one unit to suit square bars from $\frac{3}{4}$ -inch to $1\frac{1}{4}$ inches. No screws are used. The ends are firmly held by the bending inward of the serrations on the inner edges of the patented cap or end piece which provides the claw grip "Holdfast" feature. John Tomkinson & Co., Ltd., Oxford Works, Stretford, Manchester, England.

Combustion Control Regulator

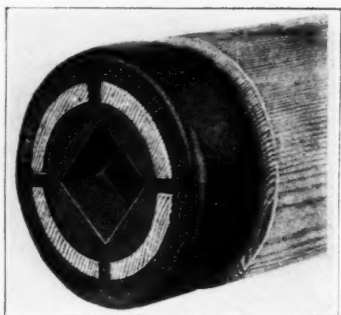
THE device pictured is a new development for the automatic control of steam boilers by means of pressure. This regulator has been designed for



Allis-Chalmers Texsteel Sheave



No. 27 MJL Regulator for Combustion Control



Tomkinson "Holdfast" Batch Roller

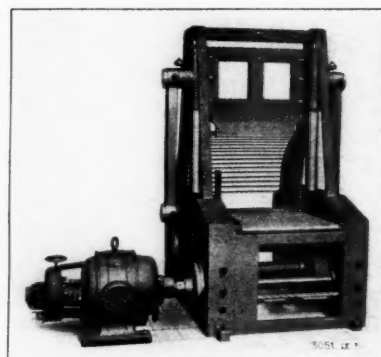
small and medium sized boiler plants where man power is limited and management demands concrete savings. These savings will include those in labor, fuel consumption, and boiler upkeep, the latter being a result of the regulator's ability to operate the boiler efficiently, at higher furnace temperatures, thereby handling sudden demands for steam without undue strain on settings, brickwork, arches, and tubes.

This regulator employs a $4\frac{1}{2}$ inch cylinder and an operating arm having a travel or movement on its outer end of 12 inches. Such movement covers

all needs for controlling dampers, gas and oil firing valves, air inlet louvers, forced draft fans, stoker steam valves, and rheostat (on electric-drive stokers). Pulverized coal installations may also be regulated with this equipment.

A well-built, simple pilot valve on top causes sensitive, positive control of the steam pressure within close limits, under all boiler loads; and an exclusive compensating feature prevents over-travel or hunting action.

This device is suitable for controlling boilers operating under steam pressures from 3 to 450 pounds per square inch. The regulator arm movement may be suited to a wide range of control conditions and mechanical movement, and the compensator may be quickly changed or adjusted to suit specific conditions. Morey & Jones, Ltd., 922 S. Hemlock St., Los Angeles, Calif.



W. & P. Crude Rubber Cutter

German Type Rubber Bale Cutter

THE machine illustrated is designed for slicing dry bales of crude rubber. It has a powerfully built base, with a roller feed table for conveying the block of rubber toward the cutting knife, reciprocating vertically on heavy guide rods supported on the machine base.

The knife, made of specially hard steel, is moved up and down by connecting rods and excentrics located at either side of the knife support. It is in motion only while the clutch is held in gear by the foot pedal. A specially designed appliance permits the knife to slice the rubber completely through without injury to its cutting edge. The machine is direct motor driven with friction clutch connection.

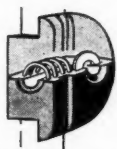
The rubber slices drop automatically on a conveying belt or into a truck for removal. The bale of rubber to be cut is laid on the roll table, pushed under the knife by hand, and sliced in pieces of desired thickness as the operator controls the power pedal.

A bale of smoked sheet rubber may be cut into 15 slices in 3 minutes with an average maximum power requirement of about 10 kilowatts. Werner & Pfleiderer, Stuttgart-Cannstatt, Germany.

New Goods and Specialties

Rubber Auto Door Bumper

A NEW, effective, and low-priced rubber accessory for every car owner is the Snubz auto door bumper, here illustrated. This useful device has claimed for it many advantages; stops door rattles; fits into the same place as old door bumpers, using the same screws, with no holes to drill; and is suitable for old or new cars. E. M. Kay Mfg. Co., 1912 S. Wabash Ave., Chicago, Ill.



SPRING MOULDED
IN RUBBER
ABSORBS SHOCKS

Rubber Raincoapes

LET it rain; let it pour! Who cares— if she has one of those smart rubber raincoapes so popular this season? Made in attractive colors with a smooth velvety finish, neat neckline, and snap

button fastener, this cape has a wide appeal, especially for emergency wear, in a rumble seat, at the football game, or on a shopping tour. This company's model boasts a feature not found on all manufacturers' styles: fitted shoulders that make for a nattier appearance. A matching envelope bag also of rubber

completes the outfit which no woman should do without. The B. F. Goodrich Co., Akron, O.

Hard Rubber Massager

RECENTLY marketed was a body massager that can be regulated for speed and the amount of tissue covered. This "Personal" Body Massager, as it is known, consists of a movable handle and 2 hard rubber adjustable spheres, all held together by chromium plated metal parts. The wider the rubber balls spread apart, the more body tissue can be reached in one moment; and the higher the handle is raised, the quicker these sphericals will travel outward. Clum Mfg. Co., Milwaukee, Wis.

Para-Graphs

A NEW line of thermoplastic cements is composed of nitrocellulose or cellulose acetate plasticizers and synthetic resin of the modified polybasic acid-polyhydric alcohol type, which are dissolved in suitable solvents. They are waterproof, flexible, resistant to the action of oils and grease, and are not affected by mild acid and alkaline solutions, nor do they become brittle on aging.

Paper surfaced with a coating repellent to uncured rubber is prepared by the application of partially neutralized waterglass or silicate of soda. This solution is neutralized to a different extent, depending upon the character of the paper to be coated. Heavy kraft paper is coated with a less neutralized silicate. Sulphuric, hydrochloric, hydrofluoric, and carbonic acids are cited as suitable neutralizing agents.

The new front and suspension system for automobiles permits material operating variations in track width; larger and lower-pressure tires might be desirable. Edges of tire treads should probably be rounded off to prevent excessive scuffing on curves.

Lastex riding breeches are made with the new 2-way stretch material, eliminating the necessity of buttons below the knees. The legs are made without side openings as the material allows enough stretch to slip the breeches on and off without much tugging. The leg bottoms stay in place comfortably without binding.

The concentration of rubber latex is effected by repeatedly forcing a stream of latex across a filter surface at a

speed which prevents clogging of the surface by the coagulated rubber. The apparatus consists of 2 tanks under which are cylindrical filters of unglazed earthenware. Suitable valves and connections are provided for forcing and reversing the flow of the latex from which the serum escapes through the filters, leaving a concentrated product.

The rubber rims of automobile steering wheels are bonded to the metal with remarkable strength. Samples of the covered rims are exposed to -5° F. for 24 hours in an electrical refrigerator cabinet and tested under an inward bending pressure of 200 pounds.

Rubber in powdered form is obtained by dividing liquid latex into drops, catching the drops apart from each other on a drying surface from which the dried particles are removed. Drying, effected by heating each side of the collecting surface, may be assisted by the use of reduced pressure, by flattening the drops on the surface by rollers, or by concentrating the drops as they fall to the surface.

An apparatus designated as an artificial ear is designed for applying to a telephone receiver an acoustic load to measure the receiver output perceived by an average observer. The receiver rests on a molded soft rubber insert having an internal contour corresponding to a human ear. This insert is cemented to a hard rubber block in which is located the continuation of the auditory canal and a small condenser transmitter used for measuring the acoustic pressure.

Rubber cushions intended for use in

thermotherapy contain sufficient powder to give 125 hours of heat, and the introduction of one teaspoon of cold water into the cushion suffices to develop uniform heat for 12 hours. The cushion is inexpensive and may be used in bed or worn to work under the upper garments. Refills of the powder are sold separately.

An adhesive highly resistant to chemical agents is obtained by adding latex, sulphur, accelerators, and activators to waterglass. Other ingredients as asbestos, barium sulphate, etc., may also be incorporated.

A new deodorant is designed to neutralize characteristic rubber odor and to perfume rubber goods. Six different aromas are obtainable, and the product is said to be constant to hot or cold vulcanization and does not affect either curing or aging.

A waterproof fabric stretchable in all directions and highly flexible is provided by a highly efficient and inexpensive process. Ordinary lace serves as a foundation. This is impregnated with rubber latex. The finished vulcanized fabric is adaptable for the manufacture of such stretchable articles as bathing caps, etc.

A method has been perfected for producing articles of molded rubber sponge from latex or aqueous dispersions of rubber whereby the formation of continuous surface skin is avoided. The cellular structure of the product thus becomes visible, and an outer surface is obtained consisting of ruptured walls instead of a more or less continuous skin.

Rubber Industry in America

OHIO

Goodrich Activities

S. B. Robertson, vice president of The B. F. Goodrich Co., Akron, has announced several new appointments for the company.

William D. Huyler was named operating manager of the Newark, N. J., district. Born in Hackensack, N. J., he was graduated from the University of Pennsylvania, a B.Sc., in 1928. Mr. Huyler joined Goodrich in Newark on July 16, 1928, and has held such positions as local manager at Harrisburg, Pa.; operating and credit manager at the Hartford, Conn., and Paterson, N. J., Goodrich Silvertown, Inc., retail stores.

J. L. Young, new manager of the Goodrich Silvertown store in Richmond, Va., where he was formerly a salesman since August 20, 1930, has been associated with the automobile and rubber industries since 1924, when he became a salesman for the Hazelhurst Motor Co., Richmond, where he remained in automotive sales until joining Goodrich Silvertown.

N. H. Biggers was made manager of the Goodrich Silvertown, Austin, Tex., store, succeeding W. G. Cater, assigned to other duties. Mr. Biggers was born in Colorado City, Tex., and spent 3 years at John Tarleton University following his grammar and high school training. He was a foreman on his father's ranch from 1919 to 1922. He joined the Burroughs Adding Machine Co. as a representative in Dallas, March, 1924. He entered the sales end of the rubber business in March, 1928, and previous to his association with Goodrich was manager of the tire department of the Panhandle Refining Co., Wichita Falls, Tex., and the Simms Oil Co., Dallas.

William T. Simmons, Jr., now manager of the Winston-Salem, N. C., Goodrich Silvertown retail store, was born in Dublin, Ga. He was graduated from Georgia Tech in 1929. He then joined Goodrich, going into training for sales in Akron. He was a pilot of the 1929 Silver Fleet. After its tour Mr. Simmons went to the Atlanta district where he was assigned further responsibilities and on January 1, 1932, became operating and credit manager of the store he now manages.

Frank S. Evans, recently appointed manager of the Syracuse, N. Y., store of Goodrich Silvertown, has been associated with Goodrich since 1916. Born in Utica, N. Y., he was graduated from Utica Academy and joined the rubber company as local manager at

Utica. He later served as branch manager in Charlotte, N. C., Brooklyn, N. Y., and Syracuse, as well as manager of tire sales in New York City.

Goodrich recently disclosed an emergency vacation program to reduce layoffs throughout the factory during the winter months, whereby workers with 5 years' continuous or credited service are being granted a week's leave of absence with pay, to be taken, if possible, before January 1, 1934. The pay is based on a 30-hour week. Factory supervision will also be granted similar leaves of absence with pay. Fifty-seven per cent of the Goodrich factory workers are affected.

Earl H. Barder, general superintendent, Goodrich tire division, and Fred Nied, factory superintendent of The Pacific Goodrich Rubber Co., have returned from Kitchener, Ont., Canada, following a series of conferences with officials of the Canadian Goodrich Co., Ltd.

George Madole, assistant managing director, Societe Francaise B. F. Goodrich Co., Colombes, France, arrived in Akron for a series of conferences with Goodrich officials there.

The Wilson Rubber Co., Canton, announces the following executive changes caused by the death of General Superintendent William D. Whitacre: Assistant Superintendent Leland Dessecker succeeds Mr. Whitacre, and Geo. B. Lenhart has Mr. Dessecker's former position. The Wilson company, which manufactures rubber gloves and mittens, leather protectors, finger cots, and drainage tubing, features the following trade names: Flamingo, Poinsettia, Puritec, Puri-tan, Eureka, Diana, Ko-Ko, Wiltex, and Std. Medium. Company officials include Fred J. Wilson, president and general manager; Wendell Herbruck, vice president and

secretary; and Karl P. Herbruck, treasurer and assistant general manager. Sales offices are maintained at 15 Park Row, New York, N. Y.; 130 N. Wells St., Chicago, Ill.; and 530 Howard St., San Francisco, Calif. Two factories are in Canton; while the British organization, Wilson Rubber Co., Ltd., is at Slough, England.

Faultless Rubber Co., Ashland, at a recent meeting of the board of directors elected the following officers: T. W. Miller, president; S. R. Finley and M. Kaufmann, vice presidents; Vernon L. Miller, factory manager; George A. Meiler, secretary-treasurer; and R. C. Johnson, assistant secretary.

The Goodyear Tire & Rubber Co., Inc., Akron, recently had distinguished visitors, the *Graf Zeppelin* and its famous skipper, Dr. Hugo Eckener. L. E. Judd, director of Goodyear public relations since July, 1932, has been made director of advertising and public relations. Goodyear has purchased the Connecticut Mills, Decatur, Ala., to produce tire fabrics. The rubber company already has cotton mills operating at Rockmart, Cedartown, and Cartersville, all in Ga.

The Advance Rubber Co., 100 Beech St., Akron, reports President F. R. Jefferys, recently purchased additional press equipment for manufacturing hard rubber battery covers and vent caps. A large gain in orders was responsible for the increase in production capacity.

B. B. Breckenridge, manager of the Trenton Firestone service station, won a 10-day trip to the Century of Progress, Chicago, Ill., for securing increased business during the past year. He motored to the Firestone Tire & Rubber Co. factory, Akron, O., where he boarded a special Firestone train for the fair.

The "Dream" Car

This "dream car," with engine in the rear, is streamlined to the last degree, even to the tires. General's modern Jumbo low - pressures blending with the contour of the car itself. By reducing wind resistance, at high speed, by 45%, the car can make 110 m.p.h. with a 75 h.p. engine, which could drive one of today's cars, of the same weight and size, only 80 m.p.h. This car, displayed at the Ford Exposition of Progress at Detroit, may be shown at the 1934 national automobile shows.



EASTERN AND SOUTHERN

Commodity Exchange, Inc., 81 Broad St., New York, N. Y., reports that in the first 6 months of its existence, May 1 to October 31, trading in futures of its 6 commodities, rubber, silver, silk, hides, tin, and copper, was of record proportions, with total contracts traded in representing an aggregate dollar value of approximately \$573,500,000. Crude rubber futures traded in totaled 757,150, compared with 271,810 for the entire year 1932, and were more than double world production during this 6-month period. During July 263,090 tons were traded in, representing 96.8% of the entire 1932 total. Prices, which by May 1 had risen from the extreme lows of the previous summer, continued to advance. The December position, starting at 5.00¢ a pound on May 1, climbed to 11.60¢ by July 18. Subsequently values declined to 6.91¢ on October 20 and closed on October 31 at 7.81¢.

Railway Express Agency, Inc., 230 Park Ave., New York, N. Y., according to General Manager J. H. Butler has extended its express air-service to Spokane, Wash. Air-express traffic at first was confined chiefly to emergency shipments, but now is becoming a regular distribution system in many businesses.

American Society of Mechanical Engineers will hold its fifty-fourth annual meeting December 4-8 at the Engineering Societies Bldg., 29 W. 39th St., New York, N. Y. At the Textile Luncheon on December 6 at the Fraternity Club, Percy Adamson, of Adamson Bros., 1790 Broadway, New York, will speak on "The Use of Lastex in Textiles." At the Airship Session, December 7, Karl Arnstein, vice president in charge of engineering, Goodyear-Zeppelin Corp., Akron, O., will discuss "Some Design Aspects of the Rigid Airship."

Motor & Equipment Manufacturers Association, 250 W. 57th St., New York, N. Y., reports that its directors voted not to merge their organization with any other association, and their action was unanimously approved by the MEMA members at the annual convention on October 31 at the Blackstone Hotel, Chicago, Ill. New officers for 1934 include president, Mason T. Rogers, of the Multibestos Co., Cambridge, Mass.; vice president, Fred C. Bahr, Arrow Head Steel Products Co., Minneapolis, Minn.; secretary, Clyde P. Brewster, K-D Mfg. Co., Lancaster, Pa.; and treasurer, C. H. Burr, SKF Industries, New York, N. Y.

United States Rubber Co. has announced that Elmer Roberts, president of the Naugatuck Chemical Co., all of 1790 Broadway, New York, N. Y., has been elected a vice president of the rubber company. Its field engineer, Burton J. Lemon, now is at the 1790 address.

Rubber Industry Codes

Suggested Tire Code Changes

On October 24, Edward D. Levy, president, The Fisk Rubber Corp. and The Fisk Tire Co., Inc., both of Chicopee Falls, Mass., sent a letter and a printed memorandum addressed to all persons interested in the tire industry, urging the modification of certain provisions of the tire code, and the additions set forth in the printed memorandum, as follows: (a) Pricing of tires in relation to percentage differences in manufacturing cost; (b) Uniform trade discounts to dealers, jobbers, and distributors; (c) The visible marking of all tires with appropriate identification of their line or grade, and the establishment of standard minimum specifications to which each tire must conform in order to be marked as of a certain line or grade.

Tire Fabric Stay Terminated

The National Recovery Administration announced on November 8 that the stay of provisions of the Cotton Textile Code permitting tire fabric manufacturers to operate 3, 40-hour shifts weekly will be terminated November 13.

The temporary exemption from the code provision limiting machine hours to 2, 40-hour shifts a week was originally granted by the President when he approved the code on July 15 and was later extended by an order of National Recovery Administrator Hugh S. Johnson on July 30.

The companies principally affected are Firestone Tire & Rubber Co., Goodyear Tire & Rubber Co., United States Rubber Co., The B. F. Goodrich Rubber Co., General Tire & Rubber Co., The Fisk Tire & Rubber Co., and Dunlop Tire & Rubber Co., although the stay was intended to cover any cotton textile mill producing tire fabric.

The stay was granted on the assertion of the tire fabric manufacturers listed above who asserted, in their original application, that an enforced reduction in machine hours at that time when they were compelled to work 3 shifts a day for 7 days a week to meet the demand would seriously cripple their operations.

W. O. Rutherford's Statement

W. O. Rutherford, president, Pennsylvania Rubber Company of America, Inc., Jeannette, Pa., made the following statement on November 16. "The tire code as submitted is not acceptable to a great majority of manufacturers as it benefits certain interests who could by a specie of price-fixing gain control of distribution through mass distributors.

"This would place the consuming tire public at the mercy of a monopolistic element as well as force many manu-

facturers and literally thousands of independent merchants out of business.

"There can be no peace or harmony in the tire industry until a code when finally adopted symbolizes the spirit of the NRA giving equal rights, together with a guarantee of security, to all manufacturers, large and small."

Marking Devices Industry

The Code of Fair Competition for the Marking Devices Industry was approved by the President, October 20, 1933. The rubber products governed by this code are rubber stamps and rubber printing dies, molded or cut.

The Overman Cushion Tire Co., Inc., 250 W. 54th St., New York, N. Y., will begin increased production of pneumatic tires immediately at its manufacturing plant in Belleville, N. J., according to President Max Cyrus Overman. As a result of a decision of the Supreme Court of the United States handed down on November 6, in which the Court denied a petition for certiorari in the patent infringement suit of the Overman Cushion Tire Co., Inc., against Goodyear Tire & Rubber Co., Inc., subsidiary of the Goodyear Tire & Rubber Co. of Akron, O., Mr. Overman contemplates expansion of his plant in Belleville and also enlarging on his merchandising of the Overman tire. The Supreme Court's denial brings into effect a judgment of approximately \$1,250,000 against the Goodyear subsidiary, which amount was held in escrow in Central Hanover Bank & Trust Co. of New York as security for payment of the judgment. The Overman company received a certified check in completion of the patent infringement suit.

Vulcanized Rubber Co., Morrisville, Pa., announces that business remains normal with good prospects for the winter.

Paragon Rubber Corp., 57th St. and First Ave., Brooklyn, N. Y., specializes in mechanical molded rubber goods.

A. L. Viles, general manager, The Rubber Manufacturers Association, Inc., 250 W. 57th St., New York, N. Y., has been appointed chairman of the group organized to solicit contributions from the rubber industry for the \$4,000,000 fund being raised by the Citizens Family Welfare Committee.

Clifford C. Johnston, president, Johnston Rubber Co., 60 Beaver St., New York, N. Y., is chairman of the New York Commodity Exchange Committee for securing contributions to the Citizens Family Welfare fund.

Douglas Haldane & Co., Inc., is an importer and merchant of crude rubber at 15 William St., New York, N. Y. Company executives include D. D. Haldane, president and treasurer; L. D. Stiles, vice president; and M. D. Haldane, secretary.

NEW JERSEY

Little change has occurred in the rubber situation in New Jersey. Many manufacturers report business has dropped off a little; while others say it remains unchanged. More help is taken on as different firms sign NRA pledges. The heel and sole and rubber shoe industry continues busy, but rubber cloth production has not increased.

Thermoid Co., Trenton, recently held its annual conference for salesmen representing the eastern territory, who discussed 1934 business and new price lists. The company finds business good at present. The Thermoid Social Club also had its annual dinner in November. About 60 members attended. Robert Lee, Thermoid vice president, spent 3 weeks at the company's exhibit at the Century of Progress, Chicago, Ill., and also went to the annual meeting of the automotive associations there.

Joseph Stokes Rubber Co., Trenton, experienced declining business, but conditions remain normal at the plant at Welland, Ont., Canada. The company had a novel display at the National Recovery exhibit at the Trenton Armory, where the Murray Co., Trenton, featured tires and tubes.

Acme Rubber Mfg. Co., Trenton, will soon hold its annual salesmen's conference to be followed by a dinner.

I. Ely Reed, late treasurer of the Mercer Rubber Co., Hamilton Square, in his will bequeathed the income from the entire estate to his widow. His holdings in the rubber company are about \$100,000, according to his will, which directs that if it becomes necessary to sell the Mercer company, the direct proceeds, if less than \$70,000, are to become part of the trust estate; if more than \$70,000, each of his children is to receive \$3,000 in cash, and the balance is to remain in trust estate. Mr. Reed also held stock in several other companies besides being a bank president. His position in the Mercer company is being filled temporarily by other officials.

Goodrich tire dealers of several New Jersey and Pennsylvania counties held a recent conference at Trenton, at which R. T. Shaw, wholesale representative of the B. F. Goodrich Co., presided. George W. Sawin, Philadelphia district manager, attended with staff representatives. The principal topic of the meeting was the rapidly widening opportunities in expansion of bus tire business.

Essex Rubber Co., Trenton, finds business unchanged, but officials are optimistic over the future.

Whitehead Bros. Rubber Co., Trenton, is very busy with mechanical goods and rubber footwear. Superintendent William A. Howell was chairman of the Mayor's Citizen Committee in charge of the annual ball for the benefit of the Poor Kiddies Fund of Trenton.

NEW ENGLAND

Davidson Rubber Co., Boston, Mass., has a new factory manager, H. S. Liddick, formerly with the Faultless Rubber Co., Ashland, O.

Archer Rubber Co., Milford, Mass., according to President J. T. Callahan has secured the services of John Goodwin, formerly manager of the clothing division of the United States Rubber Co., to assist in starting lines and sales promotion of rubber clothing. The company now manufactures rubber sundries, mechanical rubber goods, rubber covered rolls, cements, hospital sheetings, rubber clothing, and rain-coat fabrics. F. P. Lee is company treasurer. Archer recently purchased a local plant consisting of a modern building with an area of 60,000 square feet of manufacturing space and a railroad siding. The firm's New York, N. Y., office has been moved from 60 E. 42nd St. to 45 E. 17th St.

Tyer Rubber Co., Andover, Mass., manufacturer of footwear, surgical sundries, etc., has begun the construction of a single story brick office building adjoining its main plant. The removal of the office from its present location on the third floor of the plant will improve manufacturing facilities by relieving present congestion and provide the officers and clerical staff with more conveniently located quarters.

William A. Kingman, formerly chief chemist for The Dennison Mfg. Co. and later chemist for The Lowe Paper Co., has established headquarters at Framingham, Mass., where he will act as a special sales representative for the Glyco Products Co., Inc., Bush Terminal Bldg. No. 5, Brooklyn, N. Y., servicing the company's special water-soluble waxes, resins, solvents, emulsifying agents, etc.

The American Mills Co., Waterbury, Conn., weaver of narrow elastic and non-elastic fabrics, recently announced that to further its service to customers it has concentrated all its offices at its New Haven, Conn., factory.

Norwood Tire Co., Long Branch, through President David Pescoe, has announced hiring 6 additional men under the NRA pledge.

Neptune Rubber Co., which moved its machinery from Irvington and established a factory at Eggert's Crossing, near Trenton, has closed that plant. The one at Irvington is expected to continue.

Miah Marcus, president of the Puritan Rubber Co., Trenton, is very busy aside from his duties at the plant. Recently appointed chairman of the heel and sole and rubber flooring divisions of the Rubber Manufacturers Association of New Jersey, he is compelled to make several trips between Trenton and Washington. The Puritan company's business remains normal.

The Vultex Chemical Co. has acquired the land and buildings formerly owned by the Midvale Steel Co. at 666 Main St., Cambridge, Mass. The parcel, comprising 51,000 square feet of land, is served by a spur track from the Boston & Albany Railroad. Erection of an addition to the present buildings has already been started, and the new facilities will increase the manufacturing and storage capacities several fold. The Vultex Chemical Co. and its associate, the Vultex Corp. of America, expect to move into their new quarters about January 1 without interrupting their efficient service to customers.

Gardner Toy Co., Inc., 89 Spring St., Watertown, Mass., manufactures balloons and other rubber toys. Company executives include Wm. E. Gardner, president; Neil E. Tillotson, vice president and purchasing agent; and E. D. Tillotson, treasurer.

Carpenter-Morton Co., varnish maker and paint grinder, 77 Sudbury St., Boston, Mass., manufactures for the rubber footwear industry rubber shoe varnish in clear and black. The factory is at 376 W. Third St., Everett, Mass., and the branches at 1524 S. Western Ave., Chicago, Ill., 718 Cherry St., Philadelphia, Pa., and 6833 de l'Epee Ave., Montreal, P. Q., Canada. Company executives include Eugene E. Morton, president; A. Irving McLauthlin, vice president; William E. Gilmour, treasurer; and Silvanus Smith, sales manager.

The Gould Golf Ball Co., Wakefield, Mass., manufacturer of golf balls, according to its sales agent, George Montgomery, of Montgomery Sales Corp., 1350 Broadway, New York, N. Y., who recently visited the plant, will increase production facilities for 1934. Mr. Montgomery also reports booking numerous advance orders on these golf balls.

Goodyear Rubber Sundries, Inc., 69-75 Daggett St., New Haven, Conn., makes druggists' sundries and notions. James A. Murray acts as president and treasurer; and James A. Murray, Jr., as vice president, secretary, and purchasing agent.

A WARMER WAS VERY FORTUNATE IN not losing the sight of his right eye. This employee was attempting to cut off some stock on a large warming mill on which he was breaking down crude rubber. He made his cut and followed it, rolling the stock with his left hand until he was ready to cut off. Instead of cutting off, holding the small mill knife in his right hand with the blade pointing upward, he pulled the roll of rubber away from the mill. When the rubber broke, the knife in his hand inflicted a severe laceration of his left eyelid as the roll snapped toward his face. This accident resulted in 9 days lost. *Rubber Section, National Safety Council.*

OBITUARY



John W. Mapel

Goodyear Official

FOLLOWING an illness of more than a year, the result of an appendicitis operation and an attack of influenza, John W. Mapel, president of The Goodyear Tire & Rubber Co. of California, Los Angeles, Calif., since 1926, died on November 4. He had been with the company since 1923, when he was made assistant to the president. He was also president of the Goodyear Textile Mills Co., also of Los Angeles. The deceased had had a career in steel, chemicals, and public utilities before joining the rubber company.

Mr. Mapel, who was born in Milwaukee, Wis., in 1884, was a graduate of the University of Wisconsin.

His funeral services were conducted on November 6.

He leaves behind him his widow and 3 sons.

Retired Manufacturer

IN ENGLAND on October 11 died Alexander C. Wood, former president of St. Mungo Mfg. Co. of America, india rubber, gutta percha, and golf ball manufacturer, 121-23 Sylvan Ave., Newark, N. J. Mr. Wood, who for several years was a partner of St. Mungo Mfg. Co., Glasgow, Scotland, where he was born, came to the United States in 1910, when the Newark company was formed. He became its president and held that position until December, 1931, when he retired because of advancing years and business interests in Great Britain. He then went to live in England where he passed away.

While in America, Mr. Wood belonged to the Lotus, New York Athletic, Cresmont Golf, Canoe Brook Country, and Newark Athletic clubs.

General Superintendent

WILLIAM D. WHITACRE, general superintendent of The Wilson Rubber Co., Canton, O., who died recently, had been with the company 12 years. Prior to that time he served The Canton Rubber Co. for a number of years. He belonged to the Canton Masonic Lodge No. 60 and the Junior Order of American Mechanics.

Tire Firm Executive

FOLLOWING an operation in a New York hospital, Charles Ramsey Rinehart, vice president of Overman Cushion Tire Co., Inc., 250 W. 54th St., New York, N. Y., died on October 30. He was born December 31, 1875, at Uniontown, N. J. In 1898 he was graduated, a civil engineer, from Lafayette College, Easton, Pa., where he also won All-American football honors.

Mr. Rinehart's business affiliations follow: draftsman and construction engineer, Tippet & Wood, 1899-1900; assistant engineer and superintendent, Great Northern Portland Cement Co., 1900-1904, 1905-1906; designing engineer for cement plant in Texas, 1904; engineer in Mexico, 1904; superintendent, Hudson Portland Cement Co., 1906-1907; engineer, Seaboard Portland Cement Co., 1908-10; Consolidated Mines Smelter & Transportation Co., 1910-11; Southwestern Development Co., 1911-14; Fuller Lehigh Co., 1914-19; vice president, Overman tire company, 1919 to the time of his death.

Among his clubs were: Delta Upsilon Fraternity; Grand Royal Arch Chapter of New Jersey, of which he was a past grand high priest; Whitehall Club of New York; Maplewood Lodge, F. & A. M.; and Engineers, Baltusrol Golf, Maplewood Country, and Bakers clubs.

Mr. Rinehart made his home at 62 Durand Rd., Maplewood, N. J., where his widow remains.

Funeral services were held October 31 in East Orange, N. J. Interment was in Ithaca, N. Y.

Veteran Rubber Man

WALTER R. REEVES, for over 30 years associated with the Washburn Wire Works, Phillipsdale, R. I., and at the time of his retirement on June 1, its divisional superintendent, recently died at his home in East Providence, R. I., from a sudden heart attack. Born in Worcester, Mass., he was educated there and later worked for the American Steel Wire Co. in that city. He later left for England, but upon his return in 1901 he became associated with the Washburn company.

He was a 33rd degree Mason.

He leaves his wife, a son, and 4 grandchildren.



Charles H. Russell

Goodrich Manager

CHARLES H. RUSSELL, manager of the national accounts division of The B. F. Goodrich Co. truck and bus tire department, died suddenly on October 25, following a heart attack in Chicago, where he was on a business trip.

He was born near Creston, O., May 27, 1894. After his graduation from high school and business college, in June, 1915, he joined The Miller Rubber Co., where his advancement was rapid.

Mr. Russell enlisted in the United States Army Air Service at the outbreak of the World War and was commissioned as a flying officer, returning to Miller after the armistice.

In 1930 he was transferred to the Goodrich truck and bus tire department and in May, 1932, was made head of the national accounts division.

Funeral services were held October 27. Pallbearers included Goodrich and Miller executives. Burial was in Rose Hill Cemetery.

Surviving are his widow, 4 daughters, his mother, a sister, and 2 brothers.

Hold-up Victim

AS A result of being held up and kidnapped when he was robbed of the company payroll, Stephen Russell Tomlinson, for 15 years assistant treasurer of The H. O. Canfield Co., manufacturer of mechanical rubber goods, Bridgeport, Conn., became ill and died on November 6. He was born January 14, 1870, in Bridgeport and attended the Curtis primary school and Burlington Military Academy, Burlington, Vt. For 25 years Mr. Tomlinson was associated with the American Tube & Stamping Co., Bridgeport. His clubs included the Brooklawn Country and the Black Rock Yacht.

Former Superintendent

CORLISS WHITE, for 35 years superintendent of the old United & Globe Rubber Co., Trenton, N. J., died recently, having been ill for a long time with a heart condition. Following the closing of the Globe plant, Mr. White lived retired.

He leaves a widow and 2 daughters.

Burial was in Trenton, where he was a life-long resident.

Jenkins Treasurer

HEART disease caused the death, on November 4, of A. Eugene Brady, vice president and treasurer of Jenkins Bros., 80 White St., New York, N. Y. Mr. Brady, who was born in Athens, N. Y., 58 years ago, was with Jenkins Bros. 4 decades.

His widow, a brother, a son, and 3 daughters survive him.

Canadian Superintendent

SAMUEL S. WILSON, superintendent of the Joseph Stokes Rubber Co., Welland, Ont., Canada, died there October 21 after an appendicitis operation. Following his graduation from the Trenton High School in 1913 he began work for the Stokes concern at Trenton, N. J. His service was interrupted by the World War when he enlisted in the army and was overseas with the 311th United States Infantry Signal Corps, Company B. He was honorably discharged as a corporal and resumed his post with the rubber company. He received several promotions and in 1921 was made superintendent of the Canadian branch.

Survivors are his wife and a sister. He was buried in Canada.

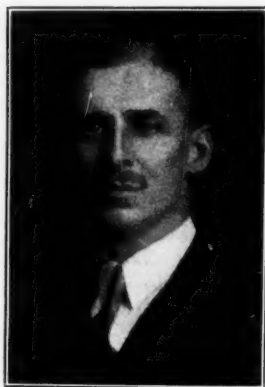
PACIFIC COAST

The Marking Devices Association of the Pacific Northwest recently was organized during a 3-day meeting in Portland, Ore. It really is the old Pacific Northwest Rubber Stamp Club, but the name was changed to denote more accurately the nature of the business. The following officers were elected for a one-year term: Julius Krebs, president, Krebs Bros., P. C. Stamp Works, Portland; Carl O. Pfeifer, secretary-treasurer, Portland Stamp & Seal Co., Portland; W. J. Stevens, director, Pacific Coast Stamp Works, Seattle, Wash.; A. T. Partridge, director, Seattle Rubber Stamp Co., Seattle; G. J. Bowman, director, Pacific Coast Stamp Works.

Desser Tire Products, 6211 Cottage St., Huntington Park, Calif., reports that the method of retreading or remolding used tires has made considerable progress in the past year; accordingly the firm recently installed several full-circle molds. This method permits curing the tread at one operation and

(Continued on page 50)

CANADA



International Press

R. C. Berkinshaw

Started as Barrister

After 13 years of service Richard Coulton Berkinshaw took another step forward this year when he was appointed general manager and treasurer of the Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ont.

He joined the legal department of the company in 1920 after a year's practice as barrister and solicitor with Tilley, Johnston, Thomson & Parmenter. In 1921 he was made assistant secretary; in 1926 secretary and general counsel; in 1931 he became assistant to the president; he was treasurer in 1932; and took on his added duties this year.

Born in Toronto, Ont., on September 2, 1891, he received his education in England and Canada. He first studied at Upper Latimer School in London, then returned and matriculated at Upper Canada College in Toronto. He received his B.A. degree from Trinity University in 1913 and graduated from Osgoode Hall Law School in 1916.

Mr. Berkinshaw is a lieutenant in the Ninth Mississauga Horse Regiment. He saw overseas service with the 124th Battalion, C. E. F., as captain and adjutant and as major of the Twelfth Battalion of the Canadian Engineers. He was mentioned in dispatches for his conduct under fire.

He married Miss Ora Kitchen of Wroxeter, Ont., in 1926, and has a son, William Robert, from his first marriage to Miss Marjorie Brown who died.

Many clubs claim Mr. Berkinshaw as a member: The National; Islington Golf; Parkdale Canoe; Canadian Progress of which he is president; Lambton; and Toronto Board of Trade. He is a Mason of Georgina Chapter No. 343, belongs to the Rameses Shrine, and is a member of Phi Delta Phi.

Viceroy Mfg. Co., Ltd., W. Toronto, Canada, through Sales Manager J. A. Wilson has announced that it and Brunswick-Balke-Collender Co., 623 S.

Wabash Ave., Chicago, Ill., have consolidated their manufacturing and sales activities on hard rubber toilet seats in Canada. Both manufacturers have, for several years, been making black hard rubber seats, the Viceroy products being trade-marked "Rubwood," and the Brunswick "Whale-Bone-Itc." Patent rights and designs and manufacturing processes from now on will be combined under one control in Canada. Brunswick seats have, up to this time, been partly manufactured in the United States. From now on both lines will be wholly manufactured in Canada by the Viceroy company and distributed through its branches at Vancouver, Winnipeg, Toronto, and Montreal. It is also understood that a similar arrangement has been consummated between the 2 companies covering the sale of the seats in all British countries.

MIDWEST

The Dryden Rubber Co., 1014 S. Kildare St., Chicago, Ill., has acquired the Hintz Rubber Products Mold Co. and has merged it with the Dryden subsidiary, the Peerless Mold & Machine Co., at 1108 S. Kilbourne Ave., Chicago. Confirming this acquisition, President Dryden, of the rubber company, in talking with a representative of INDIA RUBBER WORLD, admitted that it forecasts an increase or enlargement of the rubber goods items which the company now makes, but said he would not be in a position to make a detailed announcement of plans for perhaps 60 days. Dryden now manufactures molded and extruded rubber goods specialties in sponge and hard rubber, insulating tape, heels, soles, etc.

Noah Van Cleef, partner of Van Cleef Bros., Chicago, Ill., is president of Cycle Trades Assn. of America.

The National Sporting Goods Distributors' Association will hold its convention at the Hotel Sherman, Chicago, Ill., January 29-31, 1934, when the manufacturers' exhibits will be grouped in booths all on one floor instead of in sample rooms scattered over several floors, as in the past. For details regarding associate memberships and booths write John Hatton, secretary, Kansas City Athletic Club, Kansas City, Mo.

The Eureka Cement Co., 1912 S. Wabash Ave., Chicago, Ill., now markets a new heat- and waterproof adhesive, "Eureka Patching Paste," for fabrics as well as rubber. Sales Manager Perry says dealer response is highly enthusiastic.

Oroxo Grinding Wheel Co., 693 Monroe Ave., Detroit, Mich., lists the following executives: Erwin Meyer, president and treasurer; and J. V. Schaefer, Jr., vice president and secretary.

Rubber Industry in Europe

GREAT BRITAIN

Oil-Resisting Rubber

At the opening of the 1933-34 session of the London and District Section of the Institute of the Rubber Industry, a paper on oil-resisting rubber was presented by W. J. S. Naunton, Maldwyn Jones, and W. F. Smith. As a result of their investigations the authors make the following recommendations for obtaining oil-resistant rubber:

1. The rubber should be unmilled, that is latex compounded; or if milling is essential, it should be kept down to the minimum.

2. Since oils accelerate oxidation, oil-resisting compounds must include an antioxidant.

3. The rubber should be cured with a liberal amount of sulphur since apart from blooming there is no objection to the free sulphur; if an accelerator is used, this should be a thiuram accelerator.

4. The cure should be pushed as far as aging requirements and the danger of reversion permit.

5. The softener should be one having no deleterious effect on oil-resistance.

6. For filler as much magnesium carbonate as the nature of the finished article permits should be used.

7. Where high tensile and extension properties and resistance to low and higher temperatures are not required, oil-resistance can be increased by using a large proportion of ethylene polysulphide resins.

8. For articles such as hot oil gaskets, which must give service at higher temperatures, DuPrene is recommended, and DuPrene with an ethylene polysulphide resin in cases where extreme resistance to oil and high-grade physical properties are required.

New I. C. I. Laboratories

The Imperial Chemical Industries Dyestuffs Group at Blackley, Manchester, recently opened 2 important additions to the series of research laboratories it maintains; namely, an auxiliary products laboratory and a new rubber and resins laboratory. The latter is equipped with experimental machinery for masticating and milling sheet and crepe rubber as well as apparatus for testing and measuring tensile strength and abrasion resistance and for investigating the problem of fading of colors in rubber goods and of aging.

On the opening day samples of the earliest efforts of the Imperial Chemical Industries to perfect substitutes for natural rubber were shown and also

the latest. This newest product, the result of years of experimentation, looks like a rough piece of black rubbery stuff which, however, is claimed to possess all the most desired qualities, as resistance to heat and oil, in addition to durability, softness, etc. At present the cost as compared with natural rubber would appear to be prohibitive, being around 7s. per pound. Nevertheless it is expected that the superiority of the synthetic product will insure its ready sale for a variety of special purposes.

New Cementing Process

The British United Shoe Machinery Co. has adapted machinery originally designed for applying adhesives to leather parts, to the cementing of rubber and other waterproof garments. With this machinery a rubber latex cement, known as BB cement, must be used.

The cement, stored in a reservoir that is part of the apparatus, is spread by rollers which vary in size according to the articles to be treated. The grinding action that the rollers exert on the cement, when in contact with it, helps to keep it in the proper condition for spreading. It is claimed that the cement remains tacky for a comparatively long time, and larger batches of material can be treated and stacked in piles before being transferred to the making-up department. Making-up is carried out on rapid folding machines which automatically take up and gage the edges to the required width, then pass them under rollers to be pressed together to form a perfectly tight seam of uniform width.

British Notes

Rubber is extensively used to enhance the comfort of the new third-class sleeping carriages of the London, Midland & Scottish Railway and also to make them soundless. Thus half the 28 berth mattresses are of the Vi-Spring type and the rest Dunlop cellular air-cushion rubber; while the floor is of cork sheet 1½-inch thick, covered with a rubber mat of special design.

The Goodyear factory at Wolverhampton, which during the 6 years of its existence has been producing 3,000 covers and tubes daily, is being further extended not only to increase greatly the output of tires, but also to double the production of soles and heels. Altogether 35,000 square feet of floor space is to be added, 20,000 square feet in the milling department and 15,000 in the vulcanizing and fin-

ished stock inspection sections, while new machinery will be installed in both divisions.

A short course of 10 weekly lectures on "Ebonite and Its Industrial Competitors" is being given at the Northern Polytechnic, Holloway, London.

The business now carried on by Campbell, Achnach & Co., Wallace St., Glasgow, will be taken over by the Dunlop Rubber Co.'s works at Manchester and London, *The India Rubber Journal* learns. The work of transferring the plant south is expected to be completed by the year-end. The firm in question is one of the oldest of its kind in Scotland and makes all kinds of rubber sheeting goods, clothing, hot-water bottles, etc., and was acquired some years ago by Dunlop.

The reorganization scheme of the India Tire & Rubber Co., Inchinnan, Scotland, which gives the Dunlop company control in exchange for ⅓ of the capital, has now been approved, not, however, without some protest from Scottish shareholders who saw in the amalgamation a threat to the Scottish industry.

Spain

Spain's imports of crude rubber, which had jumped from 1,449,390 kilos in the first half of 1931 to 2,034,412 in 1932, decreased to 2,012,694 kilos in 1933. A fairly sharp drop occurred in imports of many types of rubber manufactures. Thus thread was 13,655 kilos in 1933 against 35,300 in 1932 and 22,449 in 1931; hose and packing, 29,307 kilos against 36,600 and 55,724; belting, 16,143 against 18,436 and 38,350 kilos; cotton-reinforced rubber sheets for cord tires, 120,286 against 202,273 and 97,133 kilos; tire covers, 1,170,295 against 1,555,030 and 874,448 kilos; sanitary goods, 3,325 against 3,971 and 6,391 kilos; old tires cut in pieces, 28,173 kilos against 69,182 and 36,775 kilos. Increases were noted in the imports of inner tubes, 95,078 kilos against 92,157 and 63,068 kilos; combs and hair ornaments, 11,677 against 8,504 and 10,158 kilos; footwear and accessories, 23,382 against 21,141 and 30,602 kilos; other rubber goods, 16,757 against 11,226 and 12,052 kilos.

Exports of rubber goods from Spain are still rather insignificant, and 2 of the most important items declined during the first half of 1933 as compared with the corresponding periods of 1932 and 1931. These were bands and insulations, which came to 17,179 kilos compared with 21,602 and 19,328 kilos;

and footwear and accessories (chiefly the latter), 40,533 against 84,621 and 113,708 kilos. On the other hand packing and hose improved, totaling 12,389 against 4,177 and 11,970 kilos; belting, 1,456 kilos against nothing in 1932 and 7 kilos in 1931; while other goods were 2,152 kilos against 144 and 168 kilos.

The above figures on the whole accurately reflect recent trends in the rubber industry in Spain, which is making considerable headway in rubber manufacturing and is rapidly reaching the stage where it can supply all its own needs. It is interesting to find that the strongest expansion which, by the way, is of very recent date, is taking place in sections remote from the old rubber center, which was Barcelona, that is in the Catalanian district, in eastern Spain. The large new factories of Firestone and Michelin are in the provinces of Biscay and Guipuzcoa, and other recently opened factories are in the province of Santander, all of which are along the northern coast of Spain. New works too have been started in the interior, at Madrid; while the older establishments at Segovia, also in the interior, and Bilbao, again in the North, report a considerable increase in their business.

This movement away from Barcelona, however, does not mean that activity is decreasing there, but merely that it is developing more rapidly elsewhere in Spain. Barcelona factories are as busy as ever and to continue to hold their own they are entering new fields of production; thus they have begun to work with latex and are now making articles hitherto unknown in the market.

Germany

In a recent item in *Gummi-Zeitung* attention is called to the numerous rubber articles required by the beet-sugar industry. The beets are first washed with different kinds of hose; then they are dried and conveyed on rubber belts to the slicing machines. Next the pieces are subjected to the complicated extraction process by diffusion, and a variety of acid, steam, and water hoses are employed, besides packing and washers of many descriptions for the different pumps, centrifuges, and other apparatus. At all stages rubber matting finds a use, and operators wear rubber aprons and boots.

It is learned that on application of the Witeka (Cartel of Mechanical Rubber Goods Manufacturers) the Cartel Arbitration has decided to designate the Gummiwaren Ullrich G.m.b.H., Gelnhausen, the Westdeutsche Gummiwerke Behrens & Mayr, Vallendar am Rhein, and Vollrath & Sohn, Bad Blankenburg, as outsiders from whom dealers may not buy without losing certain advantages and incurring further penalties. Recalcitrant firms apparently are to be forced to join existing cartels.

The manufacturers of rubber surgical goods have combined to form an organization to regulate selling conditions and prices. This body is to be known as Chirurka Vereinigung Chirurgische Kautschukwaren-Fabriken, with headquarters at Berlin.

Gummiwarenfabrik Flugel & Polter, Leipzig, has stopped payments and seeks legal liquidation.

The sixth general meeting of the Deutsche Kautschuk Gesellschaft took place on October 27 and 28 in Berlin, when various papers were read. Manufacturers, technologists, and scientists, all connected with the rubber industry, had all been invited to attend.

Switzerland

The Bata concern, which last year established a factory for leather footwear in Möhlin, Aargau, is planning to open up a rubber footwear factory there too, it is learned. This would give Switzerland her first rubber footwear factory. The demand for rubber footwear, it appears, has been stimulated by the imports of cheap goods from Russia, Japan, Poland, and Czechoslovakia. The effect of low prices on Swiss imports of this type of footwear is shown in the following table:

Year	Pairs	Value (Swiss Francs)
1928	1,122,489	4,376,366
1929	1,749,755	7,187,482
1930	1,558,208	6,277,060
1931	1,701,754	5,738,853
1932	2,119,419	5,449,273

Automatic Densimeter

Paul Walter, of the Etablissements Lick Paramount, describes his automatic densimeter for solid bodies designed for use in the factory.¹ The apparatus automatically registers densities of samples of any shape or weight without entailing any calculations. It is based on the fact that density is the ratio of a weight to a volume and that, therefore, it suffices to determine these 2 factors to know the result.

When the density of a body is to be determined, it is placed into a small metal basket, and the whole is then introduced into the apparatus filled with water. This action causes the level of the water to rise in proportion to the volume of the sample, and the rise in level is registered on a dial plate.

The basket rests on the platform of an automatic balance, letter-scale style, which indicates the weight of the sample; this weight is registered by a second pointer moving on the opposite side of the dial-plate. The latter is graduated in densities which can thus be directly read off.

The indications are said to be sufficiently accurate for industrial purposes. The apparatus can be used for all kinds of solid bodies, and if water dissolves the body to be studied, different suit-

able liquids may be substituted. Densimeters intended for the rubber industry are graduated from 0.9 to 2, the most usual densities in the industry.

Activated Accelerator

Accelerator Ureka C plus the activator Guantal is designed for curing solid truck tires and other thick masses of rubber. Heretofore it has been difficult to get a well balanced cure for such stocks; in consequence solid tires have been subject to explosion in service, owing to internal heat generated by high speeds in hot weather. This trouble is virtually eliminated by proper compounding and correct curing.

Pacific Coast

(Continued from page 48)

removes all doubt as to the proper cure of the tread, all the way around; secondly, it gives the effect of a new tire, eliminating any possibility of mismatching or variation in curing. The company has enjoyed a substantial increase in business volume in the past month; however, movement of scrap rubber tires and tubes has been very erratic lately.

The Rennelson Co., 426 N. Avenue 19, Los Angeles, Calif., through Douglas R. Radford states that the Farrel Poole automatic roll grinder installed to service calender and mill rolls of local tire manufacturers and rolls of paper mills in California has been very busy regrinding and correcting worn rolls. Rennelson is a subsidiary of West American Rubber Co., Inc., manufacturer of rubber goods, at the same address.

New Synthetic Preparation of Diphenylguanidine

After studying the desulphuring power of various metallic compounds, the authors¹ found that sulphate of lead is the most effective desulphuring agent. They, consequently, propose a new economical process of manufacturing diphenylguanidine, based on this finding. The new process consists in desulphuring thiocarbanilide in solution in ammoniacal alcohol by sulphate of lead, then recovering the solvent by distillation, and extracting the residue with warm water. A clear solution of sulphate of diphenylguanidine is thus obtained in which the diphenylguanidine is precipitated by the addition of an alkaline solution. The product is filtered, washed, ground, and strained. This method yields diphenylguanidine 147.5° C. melting point. The average yield starting from the thiocarbanilide is 94%.

¹ K. Shimada and T. Kimishima, *J. Soc. Chem. Ind. (Japan)*, 36, 2108, 1933; and *Caoutchouc & gutta-percha*, Aug. 15, 1933, p. 16488.

¹ *Rev. gén. caoutchouc*, July-Aug., 1933, pp. 4-5.

Rubber Industry in Far East

NETHERLANDS EAST INDIES

Native Rubber Report

The Fifteenth Report on Native Rubber Cultivation covering the second quarter of 1933 shows the steady decline in the average monthly shipments from the record high of 9,049 tons in 1929 to 7,541 in 1930, 7,393 tons in 1931, 5,198 tons in 1932, and 4,473 tons in the first quarter of 1933, followed by the recent rise from 5,508 in April, 9,025 in May, 10,884 in June, and 12,731 tons in July, 1933.

In June, 1933, the last detailed month of the report, shipments for the first time exceeded the average of 1929, but a closer examination of the figures for the individual districts reveals that while the increase in exports was marked all around, the total June shipments for Sumatra, 3,781 tons, are still well below the 1929 average of 4,807 tons for this territory. Tapping in June was still being carried out on a comparatively limited scale. Even Djambi, which has maintained its shipments fairly well since 1929, was tapping very cautiously, and the Resident of the district reports that of the more than 260,000,000 trees estimated to be planted here not more than 10 to 20% were tapped in May, 1933, a time when exports almost equaled the high average of 1929.

The Western and the Southern and Eastern Divisions of Borneo were mainly responsible for the sudden increased flow of native rubber during the second quarter of 1933. In 1929 the average monthly shipments from these parts were 1,693 and 1,786 tons respectively. In June, 1933, the totals were 3,126 and 3,080 tons respectively. The Netherlands Indies official in the subdivision of Barabai in the Southern and Eastern Division of Borneo reports that tapping there in May, 1933, exceeded anything observed even in the boom period, but that, nevertheless, fully $\frac{2}{3}$ of the areas are not yet being tapped and an important part of these areas has never yet been tapped.

The remilling industry has also been much more active. In Borneo 2 remilling plants with combined annual capacity of 550 tons resumed operations. The exports of dry rubber from the Western Division of Borneo rose from 1,037 metric tons in the first quarter of 1933 to 1,515 tons in the second; while for the Southern and Eastern Division the respective figures were 960 and 1,348 tons. In Tapanoei, Sumatra, the production of blanket rubber at the same time rose from 70 to 175 tons.

With the rising price of rubber and

renewed tapping the earnings of tappers automatically have gone up sharply. Whereas in April, 1933, tappers in some districts were making only 15 to 18 guilder cents a day, in June they averaged 35 to 45 guilder cents daily. Money is now more plentiful with the natives; consequently they are spending more freely for articles other than the barest necessities, and the native bazaars in Borneo and Sumatra present a picture of activity such as has not been long seen. In Borneo the renewed tapping led to a small boom for dealers in tapping knives and coagulants, and stocks were rapidly exhausted even though many a tapper could not cover his needs for lack of money.

The price rise has also caused speculation among the natives, and in certain places, Palembang, for instance, prices at times were higher than at Singapore.

It now remains to be seen how long the natives will keep up their increased exports. Figures for July, 1933, were about 12,700 tons; August, 11,400 tons; but provisional figures for September were 12,189 tons, so that the higher shipments have so far been well maintained.

New Latex Creaming Process

The increasing interest in the use of latex in Europe and America has planters considering shipping latex instead of crepe or sheet. Unfortunately the patent situation has so far put too many difficulties in the way of the average planter who wishes to send his latex concentrated. To find an inexpensive method of concentrating latex not already covered by patent, that can, therefore, be thrown open to the rubber planting industry, is the problem that the West Java Experiment Station set itself to solve.

It now appears that Dr. G. M. Kraay of this experiment station has found the solution. Until the process has been patented, the important details are being kept secret; but at a recent planters' meeting Dr. Kraay stated the creaming agent was a powder added to the latex in the form of a 1% solution, which acts at ordinary tropical temperature, and within 18 hours a latex of say 31% rubber content can be concentrated to 50% or more, and practically no rubber will be left behind in the serum. The creaming agent itself is cheap, the cost per kilo of rubber working out at about 0.15 guilder cents; while no expensive ap-

paratus is required to carry out the method. Full details are promised as soon as the process has been patented.

Costs of Preparing Rubber

As recently reported in these columns, an inquiry into costs of preparing rubber in Malang, Java, revealed that costs were lowest on 2 estates where the coagulum was worked on hand-run mangles. A writer in the *Bergcultures* points out that the reason why preparation with the aid of mechanical drives was expensive was that estates usually do not use motors of less than 20 h.p. which consume too much fuel and lubricant to permit really economical working. He himself had an 8 h.p. crude oil motor which gave excellent results.

Ceylon

The depression has been responsible for a new system of tapping with double cuts first started in Ceylon, and as we learn from an article by R. K. S. Murray,¹ a number of Ceylon estates have adopted the method during the past 2 or 3 years. Two main modifications are known, the Double-3 or Sunderland system, whereby trees are tapped on 2 half spiral cuts on opposite panels every 3 days with a prolonged periodical rest, and the Double-4 or Healy system, when 2 cuts are made every 4 days and no long resting period is given. The chief advantage of these systems is that they reduce tapping costs. At present there seems no indication that this economy has been effected at the expense of bark reserves or the general health of the trees. Some estates do experience difficulty in producing crepe of good color when the new systems are used, but this is apparently a minor consideration; and on the whole it is thought likely that in Ceylon the double-cut systems may supersede the usual alternate daily systems, especially on older estates.

Incidentally, the system has also been introduced in Malaya. Here, however, it was found that particularly on younger trees so tapped the renewing bark and occasionally also the virgin bark tend to bulge and in extreme cases to split. This method of tapping is therefore not encouraged for younger plantings, but trials with the various modifications of the system are recommended on mature areas of seedlings and also on buddings.

¹ *Trop. Agr.*, Sept., 1933, pp. 163-69.

MALAYA

Budding Experiment

An unusual experiment in budding recently was detailed by a planter in the *Straits Times*. The young trees, not allowed to grow over 4 feet before budding, are regularly crowned until ready for budding; the aim is to obtain rapidly a thick main stem. Budding itself is conducted in the evenings, preferably when dry, after a hot day and in the moonlight. The advantages of these new departures, it is claimed, are: 100% successful unions in 5 days; cutting down in 14 days; and most important of all, the trees brought into tapping 2 years sooner than is usual. Exactly what value is to be attached to this experiment is doubtful as yet, especially as the author appears to have been somewhat hasty in publishing his method and making his claims, seeing that he has been content with a test-tapping period of only one month.

Malayan Patents

Hitherto no periodical except the government *Gazette* has regularly published lists of patents pertaining to rubber granted in Malaya. To remedy this lack the *Journal of the Rubber Research Institute of Malaya* proposes to publish brief abstracts of all Malayan rubber

patents starting from 1933. In the September issue of the journal Dr. Wiltshire discusses the patent situation and gives a list of patents relating to rubber granted in Malaya from 1914 to 1932, inclusive. In the next issue of the journal it is planned to publish abstracts of the more important specifications of that period. Various other interesting papers in the September issue are "Oidium Heveae," by F. Beeley; "The Acidity of Raw Humus in Relation to Natural Covers," by W. B. Haines and K. S. Pillay; "Lightning Damage in Rubber Plantations," by F. Sharples; and "Manganese in Malayan Soils," by C. G. Akhurst.

Company News

Five well-known Sumatra companies: the Wampoe Tobacco & Rubber Estates, Ltd., Bah Lias Rubber Estates, Ltd., Central Sumatra Rubber Estates, Ltd., Bila (Sumatra) Rubber Lands, Ltd., and Sialang Rubber Estates, Ltd., have combined to buy properties near Johore Bahru, Malaya, having a total planted area of 3,065 acres, 2,000 of which will be budded with first-class clones. The new company will be known as the Kulai Rubber Estate, Ltd. The Sumatra con-

cerns are all in the agency of Harrisons & Crosfield, Ltd., London, England.

The Bajoe Kidoel Rubber & Produce Co., which declared a 7½% dividend for the past year's working against 2½% the year before, proposes to acquire the Macassar Plantations. The latter company through a Java subsidiary owns leasehold estates in Celebes, an island in the Dutch East Indies, covering 19,291 acres. Harrisons & Crosfield is interested in both undertakings. On the board of the Bajoe company will be: H. Eric Miller, chairman, Eric Macfadyen, Sir W. George Maxwell, J. M. W. Saunders, and John Stephens.

A new patent is being advertised for a process of making what is claimed to be an absolutely uniform product in the form of sheet, by atomizing latex simply and very economically.

The importance of including organic fertilizers as blood, meal, whale guano, sterameal, bones, oil-cakes, cattle- or farmyard manure, when manuring rubber, was stressed in a recent lecture at Kuala Lumpur by A. R. Westrop. He stated that in a test in Malacca trees receiving a mixture of sulphate of ammonia and sterameal have in the 6 years of the test given an increased yield of nearly 50%.

World Rubber Shipments—Net Exports

	May		June		Long Tons—1933		July		Aug.		Sept.		Oct.	
	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index
British Malaya	42,902	41,411	50,531	52,266	49,607	61,002	17,869	15,146	17,390					
Gross exports	13,664	16,538	18,772	17,869	15,146									
Imports	29,238	24,873	31,759	34,397	34,461	43,612								
Net	4,643	5,198	4,201	5,839	5,111	5,575								
Ceylon	475	377	271	246	125									
India and Burma	1,091	1,149	1,358	955	1,027	959								
Sarawak	583	582	*600	*600	*600	*600								
British N. Borneo	359	632	797	926	611	944								
Siam	6,782	7,352	7,367	6,460	5,868									
Java and Madura	7,298	6,654	8,580	7,985	9,164									
Sumatra E. Coast	13,195	14,779	16,334	15,161	15,005									
Other N. E. Indies	1,371	1,369	1,310	*1,325	*1,159									
French Indo-China	918	704	913	1,116	656									
Amazon Valley	*100	*100	*100	*100	*100									
Africa														
Totals	66,053	63,769	73,790	75,110	73,887									

* Estimate. Compiled by Rubber Division, Washington, D. C.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

No.	INQUIRY
1629	Manufacturer of trimmer for the edges of rubber footwear.
1630	Manufacturer of cutter for sponge rubber scrap.
1631	Manufacturer of Resistoyl.
1632	Supplier of Caoutchoucine.
1633	Manufacturer of Varneline.
1634	Manufacturer of Flexoresins.
1635	Manufacturer of cement or glue suitable to bond hard rubber to veneer.
1636	Supplier of white rayon flock.

Plantation Rubber Crop Returns by Months

	Borneo (26 Companies)		Ceylon (102 Companies)		India and Burma (21 Companies)		Malaya (338 Companies)		—Netherlands East Indies— Java and Sumatra (60 Companies)		Miscellaneous (8 Companies)		Total (615 Companies)	
	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index	Long Tons	Index
1933														
January	360	73.6	1,124	55.1	120	21.4	12,465	100.2	2,561	97.5	3,837	95.2	124	68.5
February	323	66.1	995	44.3	46	8.2	11,628	93.5	2,703	102.9	4,207	104.3	54	29.8
March	319	65.2	992	48.6	126	22.4	10,505	84.5	2,756	105.0	4,171	103.4	93	51.4
April	304	62.2	1,242	60.9	139	24.7	10,529	84.7	2,845	108.3	3,851	95.5	121	66.9
May	333	68.1	880	43.1	117	20.8	11,877	95.5	2,995	114.1	4,158	103.1	134	74.0
June	334	68.3	995	48.8	31	5.5	12,410	99.8	2,965	112.9	4,235	105.0	140	77.3
July	354	72.4	1,252	61.3	29	5.2	12,512	100.6	2,919	111.2	4,556	113.0	133	73.5
August	354	72.4	1,394	68.3	39	6.9	12,832	103.2	2,449	93.3	4,431	109.9	131	72.4
September	341	69.7	1,455	71.3	184	32.7	12,208	98.2	2,421	92.2	4,639	115.1	116	64.1
9 months ending September,														
1933	3,022	...	10,239	...	831	...	106,966	...	24,614	...	38,085	...	1,046	...
1932	2,854	...	9,876	...	816	...	112,157	...	20,917	...	38,058	...	1,366	...

NOTE: Index figures throughout are based on the monthly average for 1929=100. Issued October 26, 1933, by the Commercial Research Department, The Rubber Growers' Association, Inc., London, England.

Patents and Trade Marks

MACHINERY

United States

- 1,927,821. **Measurer.** A. O. Abbott, Jr., assignor to Morgan & Wright, both of Detroit, Mich.
- 1,928,404. **Tire Retreading Mold.** H. J. Woock, Lodi, and C. J. Peterson and J. S. Canfield, both of Sacramento, all in Calif., assignors, by mesne assignments, to Super Mold Corp., Reno, Nev.
- 1,928,542. **Tube Repair Patch Securer.** M. Reiterer, Wimpassing, Austria.
- 1,928,606. **Coating Leather with Fabric.** J. W. Sweany, assignor to H. B. Products Co., Inc., both of Brockton, Mass.
- 1,928,693 and 1,928,694. **Cementing Machine.** A. S. Johnson, Beverly, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.
- 1,928,869. **V-Belt Mold.** R. Roderwald, Berlin, Germany, assignor to Dayton Roderwald Co., Dayton, O.
- 1,928,906. **Clamping Device.** C. W. Morton and R. J. Dorn, assignors to Barr Rubber Products Co., all of Sandusky, O.
- 1,929,509. **Cable Joint Builder.** K. W. Miller, Chicago, Ill., assignor, by mesne assignments, to General Cable Corp., a corporation of N. J.
- 1,930,167. **Ball Coverer.** J. O. Goodwin, Akron, assignor to Seiberling Latex Products Co., Barborton, both in O.
- 1,930,174. **Portable Tire Repair Vulcanizer.** H. G. MacLennan, St. Kilda, Victoria, Australia.
- 1,930,736. **Rubber Treating Apparatus.** G. R. Burrell, Akron, O., assignor to Wingfoot Corp., Wilmington, Del.
- 1,930,873. **Rubber Refiner.** H. G. Brewster, Derby, assignor to Farrel-Birmingham Co., Inc., Ansonia, both in Conn.
- 1,931,002. **Rubber Dispersed Article Improver.** E. Hazell, New York, N. Y., assignor to Naugatuck Chemical Co., Naugatuck, Conn.
- 1,931,322. **Belt Splicer.** I. F. Kepler, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
- 1,931,324. **Glove Lining Form.** E. B. Newton, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.

Dominion of Canada

- 335,250. **Footwear Element Assembler.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of F. Zonino, Naugatuck, Conn., U. S. A.
- 335,594. **Centrifugal Machine.** De Laval Separator Co., New York, assignee of A. E. Flowers, Poughkeepsie, both in N. Y., U. S. A.
- 335,638. **Tire Groover.** Tire Grooving Machine Co., assignee of R. N. Pendleton and R. H. Hodge, co-inventors, all of Worcester, Mass., U. S. A.
- 335,931. **Tire Form.** Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont., assignee of H. D. Stevens, Akron, O., U. S. A.
- 335,939. **Vulcanizing Device.** Goodyear Tire & Rubber Co., assignee of

- K. R. Lewis and D. C. Waugh, co-inventors, all of Akron, O., U. S. A.
- 335,942. **Vulcanizing Press.** Goodyear Tire & Rubber Co., assignee of H. E. Morse, both of Akron, O., U. S. A.

United Kingdom

- 394,092. **Golf Ball Core Winder.** W. De La R. Bond, London. (C. S. McChesney, c/o Dunlop Tire & Rubber Corp., Buffalo, N. Y., U. S. A.)
- 394,442. **Fabric Coating Device.** Z. Hadnagy, A. Bouillard, and A. Auby, all of Neuilly-sur-Seine, France.
- 394,512. **Printing Roller Trimmer.** W. Triggs, London. (Ideal Roller & Mfg. Co., Chicago, Ill., U. S. A.)

Germany

- 585,539. **Dipping Machine.** Maschinen & Apparatebau-Gesellschaft Martin & Humeke m. b. H., Berlin.
- 585,540. **Tubing Device.** New York Belting & Packing Co., New York, N. Y., U. S. A. Represented by C. and E. Wiegand, both of Berlin.
- 586,911. **Pressure Limiting Device for Unvulcanized Tubes.** Hydraulik G.m. b.H., Duisburg.
- 587,662. **Equipment for Impregnated Ribbon Rolls.** Dunlop Rubber Co., Ltd., London, England. Represented by B. Kaiser, Frankfurt a. M.

PROCESS

United States

- 1,928,988. **Treating Rubber Surfaces.** P. H. Watkins, assignor to Naugatuck Chemical Co., both of Naugatuck, Conn.
- 1,929,603. **Goods from Aqueous Dispersions.** E. A. Murphy, Birmingham, and E. W. B. Owen, Walmley, both in England, assignors to Dunlop Rubber Co., Ltd., a British corporation.
- 1,929,812. **Insulated Conductor.** C. H. Ellis, Kenmore, assignor to General Cable Corp., New York, both in N. Y.
- 1,929,839. **Driving Machine Belting.** J. Dawson, Jr., assignor to James Dawson & Son, Ltd., both of Lincoln, England.
- 1,930,747. **Cord Belt.** W. H. Gerstenlager, Akron, O., assignor to Wingfoot Corp., Wilmington, Del.
- 1,930,764. **Pneumatic Tire.** G. D. Mallory, Akron, O., assignor to Wingfoot Corp., Wilmington, Del.
- 1,931,309. **Composite Product.** O. A. Thompson, Cuyahoga Falls, O., assignor to B. F. Goodrich Co., New York, N. Y.
- 1,931,325. **Living Plant Surface Treatment.** C. N. Pillsbury, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
- 1,931,333. **Channel Strip.** J. I. Taylor, Ridgewood, N. J., assignor to B. F. Goodrich Co., New York, N. Y.

Dominion of Canada

- 335,214. **Rubber Goods.** Anode Rubber Co., Ltd., St. Peter's Port, Chan-

nel Islands, assignee of V. J. Sprunger, Charlesville, Congo Belge, Africa.

- 335,391. **Cork-Sponge Rubber Article.** Armstrong Cork Co., assignee of D. H. Forbes, both of Lancaster, Pa., U. S. A.

- 335,476. **Inflatable Article.** I. and L. Dorogi, co-inventors, and Dr. Dorogi Es Tarsa Gummigyar R. T., assignee of 1/2 of the interest, all of Budapest, Hungary.

United Kingdom

- 394,487. **Pile Carpet.** Dunlop Rubber Co., Ltd., London; Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands; and E. W. Madge and E. A. Murphy, both of Birmingham.

Germany

- 585,447. **Threads, Fibers, Tubes from Aqueous Dispersions.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., St. Peter's Port, Channel Islands. Represented by C. Wiegand, Berlin.
- 585,624. **Objects from Aqueous Dispersions.** Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands. Represented by R. and M. M. Wirth, C. Weihe, and H. Weil, all of Frankfurt a. M., and T. R. Koehnorn, Berlin.
- 586,111. **Porous Rubber for Floors and Roofs.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands. Represented by C. Wiegand, Berlin.
- 586,282. **Grained - Surface Artificial Leather.** Helsingborgs Gummitfabriks Aktiebolag, Helsingborg, Sweden. Represented by C. Huss, Berlin.
- 587,000. **Objects from Aqueous Dispersions by Electrophoresis.** Dunlop Rubber Co., Ltd., London, England, Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands. Represented by R. and M. M. Wirth, C. Weihe, and H. Weil, all of Frankfurt a. M., and T. R. Koehnorn, Berlin.
- 587,607. **Hollow Objects, Especially Balls.** India Rubber Gutta-Percha & Telegraph Works Co., Ltd., London, England. Represented by F. Meffert, L. Sell, and E. Schlumberger, all of Berlin.

CHEMICAL

United States

- 1,928,773. **Accelerator.** I. Williams, Woodstown, N. J., and C. W. Croco, Wilmington, Del., assignors to E. I. du Pont de Nemours & Co., Wilmington, Del.
- 1,929,044. **Accelerator.** T. Weigel, Cologne-Mulheim, assignor to I. G. Farbenindustrie A. G., Frankfurt a. M., both in Germany.
- 1,929,373. **Rubber Composition.** H. Mark, Mannheim, and H. Hopff, Ludwigshafen a. Rhine, assignors to I. G. Farbenindustrie A. G., Frankfurt a. M., all in Germany.
- 1,929,453. **Synthetic Rubber.** W. L.

- Semon, Silver Lake Village, O., assignor to B. F. Goodrich Co., New York, N. Y.
- 1,929,499. **Aqueous Rubber Dispersions.** L. Kirschbraun, Leonia, N. J., assignor, by mesne assignments, to Flintkote Corp., New York, N. Y.
- 1,929,544. **Rubber Compound.** F. O. Woodruff, Quincy, assignor to H. H. Beckwith, Brookline, both in Mass.
- 1,929,560. **Age Resister.** H. A. Morton, Akron, O.
- 1,929,561. **Anti-Scorch Material.** H. A. Morton, Akron, O.
- 1,930,051. **Age Resister.** L. H. Howland, Passaic, N. J., assignor to Naugatuck Chemical Co., Naugatuck, Conn.
- 1,930,274. **Insulating Compound.** A. R. Kemp, Westwood, and J. H. Ingmanson, Bloomfield, both in N. J., assignors to Bell Telephone Laboratories, Inc., New York, N. Y.
- 1,930,436. **Chewing Gum Base.** J. O. Barker, assignor to Sweets Laboratories, Inc., both of New York, N. Y.
- 1,930,437. **Oil-Resistant Rubber Stock.** D. J. Beaver, Elizabeth, N. J., assignor, by mesne assignments, to Doherty Research Co., New York, N. Y.
- 1,931,110. **Rubber Coated Fabric.** W. S. Gocher, Fairfield, Conn., and A. N. Parrett, Wilmington, Del., assignors to E. I. du Pont de Nemours & Co., Wilmington, Del.
- 1,931,394 and 1,931,395. **Accelerator.** W. Scott, assignor to Rubber Service Laboratories Co., both of Akron, O.
- 1,931,396. **Accelerator.** R. L. Sibley, Nitro, W. Va., assignor to Rubber Service Laboratories Co., Akron, O.
- 1,931,428. **Leather Substitute.** L. Boudy, Paris, France.

Dominion of Canada

- 335,829. **Textile Coloring Method.** C. Dreyfus, New York, N. Y., co-inventor with and assignee of G. W. Miles, Boston, Mass., and H. Platt, Cumberland, Md., all in the U. S. A.
- 335,897. **Leather Substitute.** S. Yamamoto, Tokyo, Japan.

United Kingdom

- 394,007. **Diphenyl-guanidine Salts.** Dunlop Rubber Co., Ltd., London, and D. F. Twiss and F. A. Jones, both of Birmingham.
- 394,693. **Age Resister.** I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.
- 394,730. **Oil Hose.** B. D. Porritt, T. R. Dawson, J. R. Scott, and Research Assn. of British Rubber Manufacturers, all of Croydon.
- 395,109. **Amine Salts.** Dunlop Rubber Co., Ltd., London, and D. F. Twiss and F. A. Jones, both of Birmingham.
- 395,231 and 395,232. **Accelerator.** Goodyear Tire & Rubber Co., Akron, O., U. S. A.
- 395,322. **Anti-Ager.** Naugatuck Chemical Co., Naugatuck, Conn., assignee of W. P. Ter Horst, Passaic, N. J., both in the U. S. A.

Germany

- 585,446. **Adhesives.** Imperial Chemical Industries, Ltd., London, England. Represented by A. Bohr and H. Fincke, both of Berlin.
- 585,448. **Preserving Vulcanized Rubber.** Robel & Fiedler G.m.b.H., Leipzig.
- 585,622 and 585,623. **Sulphon Acids**

- from Artificial Rubber.** I. G. Farbenindustrie A. G., Frankfurt a. M.
- 585,696. **Vulcanizing Process.** I. G. Farbenindustrie A. G., Frankfurt a. M.
- 586,283. **Microporous Cellular Rubber.** Zellenkautschuk G.m.b.H., Aachen.
- 586,382. **Product Resembling Smoked Rubber.** Chemische Fabrik Ludwig Meyer, Mainz.
- 587,397. **Crumbly Coagulates from Latex.** Dunlop Rubber Co., Ltd., and Anode Rubber Co. (England), Ltd., both of London, England. Represented by H. Weil, R. and M. M. Wirth, and C. Weihe, all of Frankfurt a. M., and T. R. Koehnorn, Berlin.
- 587,608. **Accelerator.** I. G. Farbenindustrie A. G., Frankfurt a. M.
- 587,663. **Vulcanizing Process.** I. G. Farbenindustrie A. G., Frankfurt a. M.
- 587,664. **Spongy Rubber Objects.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands. Represented by C. Wiegand, Berlin.

GENERAL

United States

- 1,927,902. **Seamless Diaphragm.** R. P. Rose, Jackson Heights, N. Y., assignor to Mechanical Rubber Co., Cleveland, O.
- 1,927,955. **Stocking Treating Apparatus.** F. Schuster, Chemnitz, Germany.
- 1,928,069. **Auxiliary Tire Valve.** E. B. Moore, Evanston, Ill.
- 1,928,070. **Valve.** E. B. Moore, Evanston, Ill.
- 1,928,072. **Elastic Stocking.** E. Parkinson, Philadelphia, Pa.
- 1,928,110 and 1,928,111. **Brush.** P. Mednick, Brooklyn, N. Y.
- 1,928,117. **Net Pulling Machine.** C. B. Stewart, Port Dover, Ont., Canada.
- 1,928,119. **Vibration Dampener.** A. L. Vargha, assignor to General Motors Corp., both of Detroit, Mich.
- 1,928,137. **Garment Supporter.** W. A. Rowland, Stockbridge, Mich.
- 1,928,154. **Airplane Toy.** J. Hojnowski, Nekoosa, Wis.
- 1,928,155. **Multiflex Automobile Seat.** J. Kletsky, Springfield, Mass.
- 1,928,192. **Rubber-Repellent Coated Paper.** H. W. Walker, assignor to Champion Coated Paper Co., both of Hamilton, O.
- 1,928,193. **Pressure Responsive Switch.** E. A. Wallin and F. W. Neill, both of Kimball, Neb.
- 1,928,230. **Blackboard Eraser.** W. G. Reynolds, Holyoke, Mass.
- 1,928,259. **Gasket.** O. L. McCabe, assignor to W. D. Shaffer, both of Brea, Calif.
- 1,928,292. **Millinery Support.** P. L. Lazarus, St. Louis, Mo.
- 1,928,330. **Diaper.** C. C. DeWitt, Kalamazoo, Mich.
- 1,928,354, 1,928,355, and 1,928,356. **Non-shrinkable Textile Material.** H. R. Haertel, Wrentham, Mass.
- 1,928,488. **Stair Edge Covering.** T. Hammerschmidt, Blankenburg/Harz, Germany.
- 1,928,524. **Cushion Tire.** J. Brunswick, Paris, France.
- 1,928,526. **Spring Support.** N. Fellabaum, Findlay, O.
- 1,928,536. **Fastener.** H. C. Heinlen and L. E. Nestel, both of Bucyrus, O.
- 1,928,583. **Game Paddle.** G. M. Young,

- J. P. Bowers, and R. W. Zeiring, all of Memphis, Tenn.
- 1,928,584. **Snap Fastener Installation.** A. G. Anderson, Wollaston, assignor to United-Carr Fastener Corp., Cambridge, both in Mass.
- 1,928,614. **Low Pressure Tire Signal.** J. and N. F. Blaha, both of Chicago, Ill.
- 1,928,675. **Cushion.** R. W. Sampson, New York, N. Y.
- 1,928,682. **Running Board.** B. Bronson, assignor to Ohio Rubber Co., both of Cleveland, O.
- 1,928,703. **Air Toy.** B. C. Rubin, New York, N. Y.
- 1,928,763. **Gear.** R. H. Rosenberg, Detroit, Mich., assignor to Budd Wheel Co., Philadelphia, Pa.
- 1,928,837. **Hose Coupler.** M. Loughhead, Detroit, Mich., assignor to Hydraulic Brake Co., Los Angeles, Calif.
- 1,928,933. **Glider.** E. S. Goldberg, assignor to J. R. Bunting Co., both of Philadelphia, Pa.
- 1,928,987. **Bottle Cap.** A. H. Warth, Baltimore, Md., assignor to Crown Cork & Seal Co., Inc., New York, N. Y.
- 1,928,992. **Flexible Tubing.** J. G. Clark and C. A. Masterman, both of Westminster, England.
- 1,929,006. **Hosiery with Elastic Strain Absorber.** H. B. Snader, assignor to Vanity Fair Silk Mills, both of Reading, Pa.
- 1,929,126. **Resilient Sole Element.** K. Tuki, Camperdown, and G. Palmer, Sydney, both in N. S. W., Australia.
- 1,929,181. **Vent Device.** L. J. Thompson, Grand Rapids, Mich.
- 1,929,201. **Meter Mounting.** H. Fröhlich and E. Spahn, both of Zug, Switzerland, assignors to Landis & Gyr, A. G., a corporation of Switzerland.
- 1,929,247. **Syringe Equipment and Apparatus.** G. N. Hein, San Francisco, Calif.
- 1,929,368. **Rubberized Fabric.** F. D. Snell and A. London, both of Brooklyn, N. Y., assignors to Londat Aetz Fabric Co., Elizabeth, N. J.
- 1,929,480. **Bathtub.** F. Cappuccio, Oakland, Calif.
- 1,929,494. **Hand Protector.** W. Horlick, Jr., Racine, Wis.
- 1,929,506. **Combination Garment.** H. M. McDonald, Glencoe, Ill.
- 1,929,579. **Golf Tee and Marker.** J. Garlando, Mt. Kisco, N. Y.
- 1,929,923. **Permeable Diaphragm.** H. C. Howard and E. S. Kern, assignors to American Anode, Inc., all of Akron, O.
- 1,929,961. **Hand Scudding Beam.** G. A. Voorhies, Youngstown, O.
- 1,930,019. **Massager.** K. Novstrup, Los Angeles, Calif.
- 1,930,030. **Stocking Reenforce Attachment.** B. H. Anderson, Mansfield, Mass.
- 1,930,098. **Drilling Machine Spring Device.** A. Hossfeld, Winona, Minn.
- 1,930,107. **Acetylene Torch Safety Valve.** A. Rang, Hamburg, Germany.
- 1,930,182. **Valve Stemless Inner Tube.** A. J. Richardson, Lubbock, Tex.
- 1,930,189. **Bumper Guard.** H. S. Barbara, Deal, N. J.
- 1,930,301. **Indelible Print.** H. Beckmann, Berlin-Zehlendorf, Germany.
- 1,930,310. **Resilient Mounting Unit.** H. D. Geyer, assignor to Inland Mfg. Co., both of Dayton, O.
- 1,930,355. **Orthopedic Boot.** A. Lettermann, Berlin, Germany.

- 1,930,413. **Toe Pad.** E. N. Bruel, Brooklyn, N. Y.
 1,930,441. **Cleaning Brush.** T. W. Miller, assignor to Faultless Rubber Co., both of Ashland, O.
 1,930,585. **Tire.** E. W. Covey, Big Moose, N. Y.
 1,930,719. **Automobile Apron Protector.** S. H. H. Kuenzel, assignor to Checker Cab Mfg. Corp., both of Kalamazoo, Mich.
 1,930,766. **Gasket.** J. W. Moore, assignor to American Cast Iron Pipe Co., both of Birmingham, Ala.
 1,930,874. **Heel Wear Plate.** A. B. Byrd, Sikeston, Mo.
 1,931,026. **Bearing.** R. K. Lee, Highland Park, assignor to Chrysler Corp., Detroit, both in Mich.
 1,931,027. **Vibration Damper.** R. K. Lee, Highland Park, assignor to Chrysler Corp., Detroit, both in Mich.
 1,931,053. **Freezing Tray.** H. C. Berkeley, assignor to Inland Mfg. Co., both of Dayton, O.
 1,931,258. **Tie Rod End Assembly.** G. H. Hufferd and M. P. Graham, both of Detroit, Mich., assignors to Thompson Products, Inc., Cleveland, O.
 1,931,315. **Strip Material.** C. E. Brook, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
 1,931,320. **Corrosive Liquid Valve.** F. L. Haushalter, Akron, O., assignor to B. F. Goodrich Co., New York, N. Y.
 1,931,398. **Coin Mat.** T. W. Smith, Jr., Barberton, O.
 1,931,406. **Buoyant Life Preserver.** G. P. Denton, Rickmansworth, England.

Dominion of Canada

- 335,223. **Flexible Mat.** Canadian National Institute for the Blind, assignee of A. V. Weir, both of Toronto, Ont.
 335,310. **Door Silencer.** G. N. Décarie, assignee of U. D. Clark, assignee of the said G. N. Décarie, both of Montreal, P. Q.
 335,416. **Mat.** Durable Mat Co. (Canada), Ltd., assignee of C. F. Barker, both of Victoria, B. C.
 335,417. **Mat.** Durable Mat Co. (Canada), Ltd., assignee of A. Bianco, both of Victoria, B. C.
 335,668. **Surfacing Block.** G. McPherson, Jr., and A. Thorp, co-inventors, and St. Albans Rubber Co., Ltd., assignee of 1/2 of the interest, all of London, England.
 335,698. **Piston Suction Cup.** F. and A. Baines, co-inventors, both of Petrolia, Ont.
 335,700. **Exerciser.** H. Casler, Canastota, and T. Williams, Syracuse, co-inventors, both in N. Y., U. S. A.
 335,727. **Tire Liner.** L. L. Lawson, Renton, Wash., U. S. A.
 335,728. **Sliding Clasp Fastener.** A. Lewis, London, England.
 335,771. **Car Door Stop.** Camel Co., Chicago, Ill., assignee of E. J. Fehr, Hammond, Ind., both in the U. S. A.
 335,802. **Railway Wheel Tire.** Michelin & Cie., Clermont-Ferrand, assignee of P. M. Bourdon, Paris, both in France.
 335,803. **Railway Road.** Michelin & Cie., Clermont-Ferrand, Puy-de-Dôme, assignee of P. M. Bourdon, Paris, both in France.
 335,842. **Spare Tire Cover.** T. J. McCormick, assignee of M. Miller, assignee of R. L. Lee, all of Detroit, Mich., U. S. A.
 335,845. **Ship Bumper.** L. Porte and

- H. S. Watkins, co-inventors, both of Vancouver, B. C.
 335,867. **Tire Valve.** R. E. Hillier, Akron, O., U. S. A.
 335,877. **Broom Holder.** G. W. Mal-lory, Blenheim, Ont.
 335,917. **Anti-Skid Device.** Columbian Rope Co., assignee of M. C. Dodge, both of Auburn, N. Y., U. S. A.
 335,918. **Anti-Skid Device.** Columbian Rope Co., assignee of H. G. Met-cali and K. H. Bowen, co-inventors, all of Auburn, N. Y., U. S. A.
 335,921. **Pressure Gage.** Dill Mfg. Co., Cleveland, assignee of J. C. Crowley, Cleveland Heights, both in O., U. S. A.
 335,922. **Valve Insides.** Dill Mfg. Co., assignee of A. E. Bronson, both of Cleveland, O., U. S. A.
 335,929. **Garment Band.** Faultless Mfg. Co., assignee of J. F. Hargreaves, both of Baltimore, Md., U. S. A.
 335,940. **Tire Tread.** Goodyear Tire & Rubber Co., assignee of B. Darrow, both of Akron, O., U. S. A.
 335,941. **Tire Venting Tube.** Goodyear Tire & Rubber Co., assignee of H. A. Brittain, both of Akron, O., U. S. A.

United Kingdom

- 393,174. **Filter Press.** Blomfield Engineering Co., Ltd., London, and H. T. Durant, Sussex.
 393,186. **Brassière.** Maiden Form Brassière Co., Inc., New York, N. Y., U. S. A.
 393,198. **Heel Pad.** F. Hassel, Chemnitz, and Müller & Franke A. G., Limbach, both in Germany.
 393,279. **Dogs' Slip-On Garment.** B. Stevenson, London.
 393,326. **Sole Cementing Press.** E. A. C. Hammarsjö, Stockholm, Sweden.
 393,423. **Mooring Buoy.** H. O. Short, Kent.
 393,427. **Horseshoe.** Etablissements Chanoux Et Albisson Soc. Anon., Orange, France.
 393,452. **Water Softener.** United Water Softeners, Ltd., London. (Permutit Co., New York, N. Y., U. S. A.)
 393,673. **Bracelet.** E. Honig, Berlin, Germany.
 393,709. **Atomizer.** G. O. Corthine, London.
 393,758. **Corset.** Chappell, Allen & Co., Ltd., Redfield, and J. W. Gordon, Bristol.
 393,759. **Shoe Fastening.** A. Love, Paddington, N. S. W., Australia.
 393,784. **Pneumatic Medical Apparatus.** O. Sinanide, London.
 393,805. **Brush.** W. Wessel, Remscheid, Germany.
 393,875. **Pressure Relieving Device.** British Thermostat Co., Ltd., Middlesex, and M. Payne, Surrey.
 393,905. **Bathing Sandal.** Radium-Gummiwerke, Dellbruck, Germany.
 393,920. **Paintwork Abrasive Disk.** Etablissements Horstmann, Paris, France.
 393,974. **Mat.** Dunlop Rubber Co., Ltd., London, and H. Willshaw, Birmingham.
 394,111. **Engine Vibration Dampener.** H. Austin, Worcestershire.
 394,113. **Boot Protector.** F. Hassel, Chemnitz, and Müller & Franke A. G., Limbach, both in Germany.
 394,230. **Heel Friction Grip.** O. J. Branch and A. O. Minards, both of Northampton.
 394,252. **Saliva Ejector.** K. C. Björklund, Norrköping, Sweden.

- 394,334. **Loose-Leaf Binder.** E. A. Boom, Sussex.
 394,349. **Ventilated Boot.** O. Mavaut, Brussels, Belgium.
 394,390. **Shoe Press.** Compo Shoe Machinery Corp., New York, N. Y., U. S. A.
 394,415. **Tank.** British Thomson-Houston Co., Ltd., London; H. W. H. Warren, Coventry; and G. R. R. Bray and R. I. Martin, both of Rugby.
 394,438. **Abdominal Belt.** F. Smits, London.
 394,454. **Gramophone Pick-Up.** C. J. Barnett, Middlesex.
 394,502. **Infants' Feeding Bottle Valve.** A. A. T. Creser, Surrey, and G. B. Baker, Middlesex.
 394,516. **Powdered Adhesive Applier.** C. E. Every-Clayton, London. (Merritt Engineering & Sales Co., Inc., Lockport, N. Y., U. S. A.)
 394,543. **Game of Skill.** C. G. Guthrie, Lancashire.
 394,685. **Fabric Coating Device.** British Celanese, Ltd., London, and A. Mellor and R. J. Mann, both c/o British Celanese, Ltd., London.
 394,705. **Weighing and Filling Machine.** K. Middelboe, Frederiksberg, Denmark.
 394,932. **Box Blank.** A. G. S. Lindgren, Gothenberg, Sweden.
 394,950. **Arc-Welding Electrode Holder.** International General Electric Co., Inc., New York, N. Y., U. S. A., assignee of Allgemaine Elektrizitäts-Ges., Berlin, Germany.
 394,956. **Pipe Joint.** Terminal Products Co., Inc., New York, N. Y.
 394,988. **Sound Receiver.** Lekarsko-Technicky Prumysl Akc. Spol. and J. Harlas, both of Prague, Czechoslovakia.
 395,042. **Sanitary Device.** W. Drummond-Dick, Surrey.
 395,186. **Hose Pipe.** A. W. Williams, Nottinghamshire, and I. S. Mackenzie, Derbyshire.
 395,216. **Spinning Artificial Silk.** I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.
 585,533. **Dry Cleaning Means.** Dunlop Rubber Co., Ltd., London, England. Represented by C. Wiegand, Berlin.
 587,070. **Thermophore.** A. Blum, Vienna, Austria. Represented by C. Wessel, Berlin.
 587,227. **Cushion.** Kreuzversand Klotz G.m.b.H., Munich.
 587,232. **Pessary.** A. C. Stockel, Berlin.
 587,318. **Nipple.** F. Szezinsky, Berlin.
 587,498. **Spring.** Continental Gummi-Werke A. G., Hannover.

Germany

TRADE MARKS

United States

- 306,725. **Selfvulc.** Crude rubber and latex chemically treated and water dispersed, prevulcanized. Self-Vulcanizing Rubber Co., Chicago, Ill.
 306,726. **Airvulc.** Crude rubber and latex chemically treated and water dispersed, prevulcanized. Self-Vulcanizing Rubber Co., Chicago, Ill.
 306,731. **Zenith.** Hard rubber combs. Glemby Co., Inc., New York, N. Y.
 306,732. **Geometric figure** containing the word: "Barb-O-Craft." Hard rubber combs. Glemby Co., Inc., New York, N. Y.

EDITOR'S BOOK TABLE

New Publications

"A Century of Business Progress." The Cleveland Liner & Mfg. Co., 5508 Maurice Ave., Cleveland, O. This is a chart of business cycles covering the years from 1830 to 1936. The interpretations shown are based upon a chart of the National Association of Purchasing Agents, with acknowledgments accorded to Col. Leonard P. Ayres, of Cleveland Trust Co., and L. C. Reynolds, American Writing Paper Co., Holyoke, Mass.

"15% Fuel Saving." The Brown Instrument Co., Philadelphia, Pa. This broadside illustrates and describes the Brown electric CO₂ meter and its application in boiler plants as a measure of economy.

"Data Sheets on Calcene." Reinforcing Calcium Carbonate Pigment for Rubber." The Columbia Alkali Corp., Barberton, O. This summary of the advantages of Calcene is illustrated by a series of 7 graphs of tensile properties of test compositions.

"Patterson Unipower Self-Contained Agitators." The Patterson Foundry & Machine Co., East Liverpool, O. This broadside describes a special 15-point power unit with high efficiency speed reduction. It is of integral construction; the entire unit is complete in a single assembly suitable for stirring liquids, pastes, etc.

"Fine Rubber Goods for Sports Use." The Seamless Rubber Co., New Haven, Conn. This 1933-1934 catalog covers rubber goods for sports and games with special balls, bathing caps, swimming toys, etc., also forms of zinc oxide adhesive plaster that are suitable for minor accidents.

"Brown Thermometers and Pressure Gages." The Brown Instrument Co., Philadelphia, Pa. This publication, known as Catalog No. 6702, lists, pictures, and describes the new Brown indicating, recording, and controlling thermometers and pressure gages, in which are embodied many new and improved features, such as universal case, electric chart drive, automatic pen release, combination door handle and lock, toggle switch for chart drive, etc.

"Uniform Cost Activities in Trade and Industry." Prepared by Policyholders Service Bureau, Group Insurance Division, Metropolitan Life Insurance Co., 1 Madison Ave., New York, N. Y., 1933. This publication is the result of a review of the uniform cost experiences of more than 76 trade associations and sets forth as well the opinions and ideas of a number of responsible executives in a wide variety of industries. Procedures entailed in administering uniform cost activities and methods of preparing uniform cost accounting manuals are likewise discussed.

"Handbook of Chemistry and Physics." A Ready Reference Book of Chemical and Physical Data." Eighteenth Edition, 1933. Editor in Chief, Charles D. Hodgman. Chemical Rubber Publishing Co., West 112th St. and Locust Ave., Cleveland, O. Flexible leather, 1,818 pages; 4¾ by 6¾ inches. Price \$6.

The Eighteenth Edition of the "Handbook of Chemistry and Physics" represents a 20-year accumulation of necessary data for the busy scientist and engineer that are not only acceptable, but highly essential in the commercial, educational, and research laboratory. This handbook is now accepted as occupying a field of its own and as being the only authentic guide and reference in the sciences relating to chemistry and physics. This Twentieth Anniversary Edition comprises 1,818 pages of the most up-to-date data procurable.

Most important of the revisions in this edition is that of the table of physical constants of inorganic compounds. This table has been completely revised. Nearly 1,000 new compounds have been added, and more complete and recent data are supplied for those previously listed. The metal-organic compounds have been placed in a separate table following the one on the physical constants of inorganic compounds. Their number has been greatly increased, owing to their growing importance. The arrangement of both of these tables has been improved to facilitate finding and studying the properties of related substances.

The following new tables have also been added to this edition: volumetric primary standards, efficiency of drying agents, liquids for index by immersion method, density of fluosilicic acid solutions.

In addition to these major changes many minor corrections and additions have been made throughout the handbook.

"Effect of Temperature and Frequency on the Dielectric Constant, Power Factor, and Conductivity of Compounds of Purified Rubber and Sulphur." A. H. Scott, A. T. McPherson, and Harvey L. Curtis, United States Department of Commerce, Bureau of Standards Research Paper RP585. Part of Bureau of Standards Journal of Research, Vol. 11, August, 1933. Paper, 36 pages, 5¾ by 9 inches.

This paper is of special interest to electrical engineers and manufacturers of insulated wire and cables. Its contents follow: Introduction; Preparation of Specimens; Measurement of the Dimensions of Specimens; Mounting of Specimens for Electrical Measurement; Electrical Measurements; Value of

Electrical Properties; Comparison of the Electrical Properties of Compounds of Purified Rubber and Sulphur with Those of Crude Rubber and Sulphur; Selection of Rubber Compounds for Specific Uses; Conclusion; and Acknowledgment.

"Plastic Molding." An Introduction to the Materials, Equipment, and Methods Used in the Fabrication of Plastic Products. By Louis F. Rahm. McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York, N. Y., 1933. Cloth, 246 pages, 6 by 9¾ inches. Illustrated. Indexed. Price \$3.

This book is a comprehensive treatise on principles and practices of plastic molding. Its practical value will at once be appreciated by manufacturers, engineers, and those having interest in plastic molding. The subject is considered systematically in 4 parts: namely, The Molding Process and the Plastics; Molds; Operating Equipment; and The Molding Plant. The appendix lists plastic products and produces, also tabulated data on presses, steel pipes, etc., and bibliography of standard technical handbooks.

Rubber Bibliography

(Continued from page 40)

REJUVENATING OLD RUBBER PLANTATIONS. P. R. May, *Trop. Agr.*, Sept. 1933, pp. 137-52.

DOUBLE-CUT TAPPING SYSTEMS IN CEYLON. R. K. S. Murray, *Trop. Agr.*, Sept. 1933, pp. 153-69.

USE OF TITANIUM WHITE (TITANIUM DIOXIDE) IN COLD VULCANIZATES. E. Wurm, *Kautschuk*, Oct., 1933, pp. 148-50. (To be continued.)

BALANCE PLASTOMETER; a Simple Apparatus to Measure the Plasticity and the Recovery of Soft Materials. (From *Physics*, Aug., 1933, pp. 285-88.) J. Hockstra, *Kautschuk*, Oct., 1933, pp. 150-52.

SAFE USE OF CARBON TETRACHLORIDE IN THE RUBBER INDUSTRY. L. J. D. Healy, National Safety Council, Chicago, Ill.

PAYING DIVIDENDS ON THE ACCIDENT PREVENTION DOLLAR. E. W. Beck, National Safety Council, Chicago, Ill.

SULPHURIC ACID AS A LATEX COAGULANT. J. H. Wiltshire, *Rubber Chem. & Tech.*, Oct., 1933, pp. 415-21.

Parol

Parol, an abbreviation for para-chlorometacresol, is the trade name under which the non-poisonous antiseptic, Raschit, is handled in English speaking countries. Its field is the prevention of mold, fermentation, and putrefaction in latex, glue, inks, leather finishes, dressings for textiles, etc.

Market Reviews

CRUDE RUBBER

THE increase of approximately 1.75¢ in rubber prices in the last 4 weeks makes it appear as if the President's inflationary policy were successful, except that rubber prices have increased far more than other commodities because it is a foreign-grown product and extremely sensitive to sterling fluctuations. Thus, since sterling has reached new high levels recently in comparison with a dollar around 60¢, rubber prices have tagged right along. Speculative activity has boosted the volume of trading up again, but the gains effected have no solid base, and should sterling make an about face or the President go back to a sound dollar currency, rubber prices probably would suffer sharply.

Chances of an abandonment of the present effort to depreciate the dollar seem slim as this is written. With Secretary Woodin out of the Treasury temporarily, his place taken by H. Morgenthau, Jr., known wholly to favor the President's plans, and with the resignation of Professor O. Sprague, the sound-money advisers of the President have been relegated to back seats.

Statistical news of rubber has not been encouraging. October consumption was above that of a year ago, although less than in September; but a comparison of 31,906 tons consumed by manufacturers with imports of 43,016 tons and 58,568 tons afloat to this country shows increasing stocks already unwieldy.

So many restriction meetings were held with so few definite results that any news on the subject receives little attention; however, opinion is pretty general that restriction will come in the near future.

Outside Market business was quiet as it has been for some months. Manufacturers, with goodly stocks of rubber on hand, hesitate to buy at present when prices are artificially higher because of the depreciated dollar.

Week ended October 28. Rubber prices climbed considerably during the

RUBBER BEAR POINTS

1. October imports were 43,016 long tons, 9.2% under September, but 21.3% over October, 1932.
2. Domestic stocks on October 31 were 343,579 long tons, 2.7% over September, but 4.1% under October 31, 1932.
3. Crude rubber afloat to the United States on October 31 was 58,568 long tons, compared with 57,255 last month and 40,176 last October.
4. The advance in rubber prices this month was based on the rise in sterling and the depreciated dollar and not because of developments in the industry.
5. October Malay shipments of 61,002 tons were the largest since December, 1928. Of the total, 40,371 tons were shipped to the United States against 29,361 in September and 21,042 in October, 1932.
6. Factory buyers have not been active in the market because of fear of the violent fluctuations in the dollar.
7. The meeting at Batavia on November 24 was held, but no announcement was made on restriction.

RUBBER BULL POINTS

1. October consumption of crude rubber by United States manufacturers was 31,906 long tons, compared with 22,286 a year ago.
2. The first 10 months' consumption was 347,439 long tons, compared with 290,754 in the same 1932 period.
3. Automobile sales have held up well in November in anticipation of the automobile code which will fix used-car trade-in prices.
4. Restriction efforts have not ceased, and an agreement is said to be imminent.
5. The opposition of natives to restriction can be overcome, according to indications.
6. The fall of the dollar has reduced the return to growers, at primary centers; this change should aid restriction negotiations.

week, ending with advances of 55 to 61 points. The tone at the week-end, however, was less steady than during the early part of the week when the President's announcement of a new gold policy raised all commodity prices.

At the close of the week December was 7.80¢ against 7.25¢ the prior week; March 8.25 against 7.64; and July 8.65 against 8.05.

A restriction meeting was held during the week at London between British, Dutch, and French growers. But no information was forthcoming. The next important meeting is on November 24, and few new developments are expected before then.

Automobile production last week was 25,004 units, against 36,753 in the preceding week and 10,959 in the same

week a year ago. Producers are curtailing production sharply to clear dealers' stocks of old models before the year-end when new cars will probably be marketed. Factories, closing down somewhat in their operations, are working on new models.

Week ended November 4. Beginning Wednesday rubber prices gained and closed the week from 46 to 54 points higher than on last Saturday. The rally resulted principally from sympathy with stock and commodity prices because rubber statistics were far from favorable.

The December position closed at 8.28¢, compared with 7.80¢ a week ago; January 8.43 against 7.95; March 8.71 against 8.28; May 8.98 against 8.45; and July 9.19 against 8.65.

Dutch East Indies shipments totaled 30,519 tons in September, compared with 80,081 in August, 33,002 in July, and 18,296 in September, 1932.

October Malay shipments were 61,002 tons, the largest since December, 1928, when the total was 66,763 tons and marked the end of the Stevenson restriction plan at that time. The present high rate of shipments was ascribed to fear of export duties and an increase in Singapore freight rates, although the latter is not effective until January 1. The October figure compares with September exports from the same source of 49,607 tons. On the release of the report prices lost only a few points and rallied for the rest of the week; this condition means that the market is paying more attention to outside developments than to statistics.

Restriction news begins to pall on members since it has all been so indecisive up to now, but as Robert L. Baird, of H. Hentz & Co., recently said in one of his market letters:

"Today Malayan shipment figures for October were reported over 61,000 tons, which will probably frighten off buyers for the time being. In the long run, the greater the ratio of production to

New York Outside Market—Spot Closing Rubber Prices—Cents per Pound

	October, 1933										November, 1933									
	23	24	25	26	27	28	30	31	1	2	3	4	6	7*	8	9	10	11	13	14
Ribbed Smoked Sheet...	7 1/4	7 3/4	7 7/8	7 7/8	7 3/4	7 3/4	7 3/4	7 3/4	7 3/4	7 3/4	8	8 1/8	8 1/8	...	8 3/4	8 3/4	8 3/4	8 3/4	8 3/4	8 3/4
No. 1 Thin Latex Crepe	8 1/8	8 3/4	8 3/4	8 1/2	8 3/8	8 3/8	8 3/8	8 1/2	8 1/2	8 3/8	8 3/8	8 3/8	8 3/8	...	9 1/4	9 3/8	9 3/8	9 3/8	9 3/4	9 3/8
No. 1 Thick Latex Crepe	8	8 5/8	8 5/8	8 3/8	8 1/2	8 1/2	8 1/2	8 3/8	8 3/8	8 1/2	8 3/8	8 3/8	8 3/8	...	9 1/8	9 3/4	9	9 1/4	9 3/8	9 3/8
No. 1 Brown Crepe...	5 3/8	5 1/2	5 5/8	5 3/8	5 5/8	5 5/8	5 5/8	5 1/2	5 1/2	5 5/8	5 3/4	5 3/8	5 3/8	...	6	6 3/4	5 7/8	5 7/8	6 3/4	6 3/4
No. 2 Brown Crepe...	5 1/4	5 3/8	5 1/2	5 1/4	5 1/2	5 1/2	5 1/2	5 3/8	5 3/8	5 1/2	5 3/8	5 3/8	5 3/8	...	5 7/8	6 1/4	5 3/4	5 3/4	6 1/4	6 1/4
No. 2 Amber...	5 3/8	5 1/2	5 5/8	5 3/8	5 5/8	5 5/8	5 5/8	5 1/2	5 1/2	5 5/8	5 3/4	5 3/8	5 3/8	...	6	6 3/8	5 7/8	5 7/8	6 3/4	6 3/4
No. 3 Amber...	5 3/4	5 5/8	5 1/2	5 3/4	5 1/2	5 1/2	5 1/2	5 3/8	5 3/8	5 1/2	5 3/8	5 3/8	5 3/8	...	5 7/8	6 1/4	5 3/4	5 3/4	6 1/4	6 1/4
No. 4 Amber...	5	5 1/8	5 1/4	5	5 1/4	5 1/4	5 1/4	5 1/2	5 1/2	5 1/4	5 1/4	5 1/4	5 1/4	...	5 3/4	6	5 1/2	5 1/2	5 3/4	5 3/4
Rolled Brown...	4 1/4	4 3/4	4 5/8	4 3/8	4 3/4	4 3/4	4 3/4	4 3/8	4 3/8	4 1/2	4 1/2	4 5/8	4 5/8	...	4 3/4	5 1/8	4 5/8	4 5/8	4 3/4	4 3/4

*Holiday.

consumption, the nearer we come to enforced restriction. Restriction is bound to come unless Holland and Great Britain expect to act the part of philanthropists to us."

From all indications the administration is determined to raise commodity prices by adjustment of the currency, but whether the adjustment will require actual inflation is still a moot question. Criticism of the NRA grows rapidly, and unless improved business comes soon we may see more radical plans promulgated than we have had so far. Or the new experiments may be discarded and rugged individualism and a sound gold dollar may again have first consideration.

In the Outside Market prices were steady all week. Factories were in the market for a fair amount of business. Purchases were made in the fear that the government's new gold policy would raise prices; while those who made no commitments pointed to the 61,000 tons exported from Malay in October as evidence that prices could hardly go much higher in the face of such over-production.

November-December ribbed smoked sheets sold for 8¼¢, compared with 7¾¢ the week before; January-March 8½ against 8¼; April-June 8¾ against 8¼; and July-September 9 against 8½.

Week ended November 11. With sterling hitting \$5.15 in terms of the dollar, the highest level since the war, rubber prices gained sharply to account for a rise of 36 to 44 points on Thursday with a volume of 11,590 tons, the greatest since July 1. Prior to Election Day the market lost ground in sympathy with other markets, and profiting on Friday reduced Thursday's advance, but for the week prices were from 30 to 36 points higher.

December closed at 8.58¢, compared with 8.28¢ the week before; January 8.73 against 8.43; March 9.04 against 8.71; May 9.30 against 8.98; and July 9.55 against 9.19.

Statistical reports and restriction news were hardly favorable, but rubber has been disregarding statistics for some time. Fluctuations in rubber have coincided largely with sterling prices so that the government's policy of cheapening the dollar in terms of sterling has resulted in better rubber prices here although statistics do not warrant them. The breakdown of the Malay statistics, for instance, show that 40,

371 tons of the 60,000-ton total came to the United States, compared with 29,361 tons in September, and 21,042 in October, 1932.

The government's gold policy at present has all the financial centers in suspense. As the dollar declined, brokers and traders fled this market trying to cover themselves by buying sterling abroad. Bankers reported a near panic in their eagerness to acquire sterling. Much criticism is being leveled at the government's policy since it was leading to the destruction of confidence in the dollar, according to bankers.

In the Outside Market prices were up about ¼¢. Factories bought rubber under the market in the middle of the week, but on the whole were out of the market. The large volume of rubber traded in the past week passed through the Exchange principally where speculators were riding the tide with the price fluctuations caused by the erratic dollar.

At the close of the week November-December ribbed smoked sheets sold at 8½¢, compared with 8¼¢ the week before; January-March 8¾ against 8½; April-June 9 against 8¾; and July-September 9¼ against 9.

Week ended November 18. Up to Saturday volume on the exchange averaged 7,800 tons, with 2 days' totals above 9,000, but on Saturday the figure fell to 1,480 tons, indicating the drop in speculations. The market advanced as much as 50 points during the week, but the gains were prompted merely by speculative interests. The price of sterling rose to new high levels this week, and rubber with it, before the government's apparent change of policy toward gold purchases. For the latter part of the week the price posted by the government agency buying gold remained unchanged, leading some traders to expect a pegged price at or near present levels, but the President's speech in Georgia on Saturday gave no indication of a change in his gold policy.

At the close of the week prices were from 32 to 41 points higher. December was 8.90 against 8.58; January 9.08 against 8.73; March 9.43 against 9.04; May 9.71 against 9.30; and July 9.95 against 9.55.

Although the market little heeded anything but sterling prices, progress seems to have been made with restric-

tion. Reports of a "substantial agreement" among Britain, Holland, and France were received, with negotiations on to enlist minor producers.

Besides another secret meeting was held in Holland by Dutch, British, French, and Belgian representatives; progress was reported in dealings with the problem of native production in Indo-China and the Dutch East Indies.

The rubber consumption report was up to expectations. October takings in the United States by manufacturers were 31,906 long tons, compared with 35,686 in September and 22,286 in October, 1932. For the first 10 months consumption was 347,439 tons, compared with 290,754 in the same 1932 period.

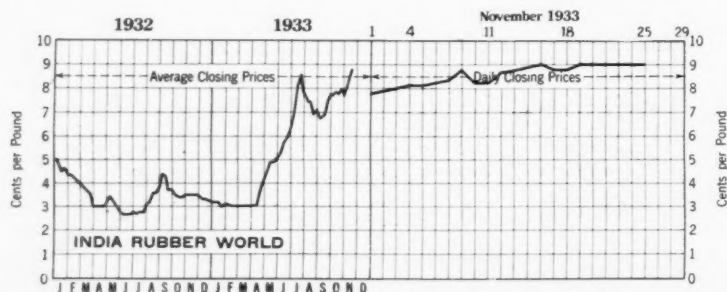
(Continued on page 70)

New York Quotations

New York outside market rubber
quotations in cents per pound

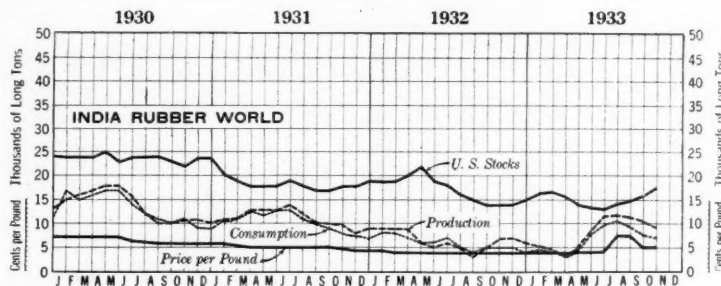
	Nov. 26, 1932	Oct. 25, 1933	Nov. 25, 1933
Plantations			
Rubber latex....gal. 51		72	72
Sheet			
Ribbed, smoked, spot	3 7/8	7 3/8/7 1/2	9 / 9 1/4
Nov.-Dec.	3 1/8	7 1/2/7 3/8	9 / 9 1/4
Jan.-Mar.	3 1/8	7 3/4	9 3/8/9 1/2
Apr.-June	3 1/8	8	9 3/4/9 7/8
Crepe			
No. 1 thin latex, spot	4 1/8	8 3/8	10 / 10 1/4
Nov.-Dec.	4 1/8	8 3/8/8 1/2	10 / 10 1/4
Jan.-Mar.	4 1/8	8 5/8	10 1/4/10 1/2
Apr.-June	4 1/8	8 3/4/8 7/8	10 1/2/10 3/4
No. 3 Amber, spot	3 1/8	5 3/8/5 1/2	6 3/8/ 6 1/2
No. 1 Brown	3 1/8	5 1/2/5 3/8	6 1/2/ 6 3/8
Brown, rolled	2 3/4	4 3/8	5 1/8/ 5 1/4
Paras			
Upriver fine	7	8 1/2	9
Upriver fine	9 3/4	*11 1/4	*12 1/2
Upriver coarse	3	6	8 1/2
Upriver coarse	*5 1/2	*10	*12
Islands fine	6 3/8	7 1/2	8 1/2
Islands fine	*9 3/4	*11	*12 1/2
Acre, Bolivian fine.	7 1/8	9	9 1/4
Acre, Bolivian fine.*10		*11 1/2	*11 3/4
Beni, Bolivian	7 1/4	9	9 1/4
Madeira fine	7	8 3/4	9
Pontianak			
Bandjermasin	5	7	6
Pressed block	6 1/2	12	12
Sarawak	5	7	c
Caucho			
Upper ball	3	6	..
Upper ball	*5 1/4	*10	..
Lower ball	2 1/2	..	..
Manicobas			
Manicoba, 30% guar.	†2 1/2	†3 1/4	†4 1/2
Mangabiera, thin sheet	..	..	..
Guayule			
Duro, washed and dried	12	12	12
Ampar	13	13	13
Africans			
Rio Nuez	3 3/4	11	14
Black Kassai	6 1/2	9	12
Manihot cuttings ..	3 1/2	..	..
Prime Niger flake..	15	20	20
Gutta Percha			
Gutta Siak	6 1/2	12	12
Gutta Soh	13	14	17
Red Macassar ..	1.50	1.35	1.30
Balata			
Block, Ciudad			
Bolivar	17	30	32
Manaos block	17	30	32
Surinam sheets ..	25	38	40
Amber	26	40	45

*Washed and dried crepe. Shipments from Brazil. †Nominal.



New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets

RECLAIMED RUBBER



Production, Consumption, Stocks, and Price of Tire Reclaim

THE current demand for reclaim has been declining in the past few months owing to the excess of rubber goods produced last summer. Reclaim production has fallen off correspondingly. Reclaimers are contracting with manufacturers of rubber goods for delivery of reclaim up to July 1, 1934, at the current price levels for most grades. This policy differs from the marketing conditions of crude rubber in that forward months sales of the latter generally command slight premiums.

Should either restriction or inflation occur, prices would rise sharply; therefore the buyer who contracts at current levels will be favored with considerable advantage especially as the demand might be much greater under the circumstances.

New York Quotations

November 25, 1933

High Tensile	Spec. Grav.	Cents per Lb.
Super-reclaim, black	1.20	7 7/8
red	1.20	6 1/2
Auto Tire		
Black	1.21	4 3/4
Black selected tires	1.18	5 1/2
Dark gray	1.35	5 3/4
White	1.40	7 1/8
Shoe		
Unwashed	1.60	6 1/2
Washed	1.50	8 1/9
Tube		
No. 1	1.00	11 1/2
No. 2	1.10	6 3/4
Truck Tire		
Truck tire, heavy gravity	1.55	5 1/4
Truck tire, light gravity	1.40	5 3/4
Miscellaneous		
Mechanical blends	1.60	4 1/4

United States Reclaimed Rubber Statistics—Long Tons

Year	Production	Consumption	Per Cent to Crude	United States Stocks*	Exports
1930	157,967	153,497	41.5	24,008	9,468
1931	132,462	125,001	35.7	19,257	6,971
1932	75,656	77,500	23.3	21,714	3,536
1933					
January	5,301	4,811	21.0	16,262	130
February	4,578	4,363	20.2	16,570	178
March	3,847	3,454	19.1	15,496	353
April	4,617	4,407	16.8	14,370	165
May	8,366	7,770	17.4	13,734	319
June	10,591	9,674	18.8	13,231	223
July	12,049	10,327	20.6	14,108	507
August	11,708	9,446	21.0	15,037	353
September	10,435	7,862	22.0	15,869	367
October	9,466	7,212	22.6	17,748	...

* Stocks on hand the last of the month or year.

Compiled by The Rubber Manufacturers Association, Inc.

U. S. Crude and Waste Rubber Imports for 1933

	Plantations	Latex	Paras	Africans	Centrals	Guayule	Maniocoba and Matto Grosso	Totals	Balata	Miscellaneous	Waste
Jan. tons	30,123	680	297	10	..	..	..	31,110	31,298	8	516
Feb. tons	18,407	246	217	5	..	..	..	18,875	30,546	16	483
Mar. tons	27,074	528	269	8	..	..	..	27,879	42,382	49	836
Apr. tons	18,436	654	369	..	..	..	..	19,459	37,017	14	463
May tons	26,770	629	147	10	..	..	..	27,556	32,224	47	628
June tons	22,086	451	192	..	..	..	..	22,729	41,394	463	574
July tons	43,155	502	631	2	..	..	..	44,290	31,078	356	646
Aug. tons	43,524	710	568	..	..	..	..	44,802	34,219	68	801
Sept. tons	45,817	1,043	492	..	..	..	..	47,352	29,509	79	1,116
Oct. tons	41,423	1,058	503	3	29	..	..	43,016	35,473	101	660
Total, 10 mos., 1933	316,815	6,501	3,685	38	29	..	..	327,068	1,201	6,723	93
Total, 10 mos., 1932	340,855	3,111	1,039	135	..	..	..	345,140	519	5,385	125

Compiled from The Rubber Manufacturers Association, Inc., statistics.

RUBBER SCRAP

THE advance in crude rubber served to stimulate the demand for scrap on the part of reclaimers; consequently more scrap was called for in November than in October.

BOOTS AND SHOES. Trade in these grades is well maintained at price levels unchanged from those prevailing a month ago.

INNER TUBES. The demand for inner tubes is good, particularly so for export.

TIRES. Tires are dull. Declines are noted in the case of mixed auto tires with beads and auto tire carcasses. All other pneumatic grades are quoted unchanged.

SOLID TIRES. Clean mixed and light gravity grades have advanced \$3 and \$2 respectively.

MECHANICALS. All grades in this division are quoted unchanged except air-brake hose on which a decrease of 50¢ per ton is quoted.

HARD RUBBER. The export demand is good. The price advanced 1¢ a pound.

CONSUMERS' BUYING PRICES

(Carload Lots Delivered Eastern Mills)

November 25, 1933

Boots and Shoes	Prices
Boots and shoes, black....lb.	\$0.01 1/4 / \$0.01 1/2
Colored .....	.01 / .01 1/4
Untrimmed arctics .....	.01 / .01 1/4
Inner Tubes	
No. 1, floating .....	.05 1/4 / .05 3/4
No. 2, compound .....	.02 3/4 / .02 7/8
Red .....	.02 3/4 / .02 7/8
Mixed tubes .....	.02 3/4 / .02 7/8
Tires (Akron District)	
Pneumatic Standard	
Mixed auto tires with	
beads	ton 10.00 / 10.75
Beadless	ton 16.50 / 16.75
Auto tire carcasses	ton 11.00 / 12.00
Black auto peelings	ton 18.00 / 19.00
Solid	
Clean mixed truck	ton 33.00 / 35.00
Light gravity	ton 40.00 / 42.00
Mechanicals	
Mixed black scrap	lb. .01 / .01 1/4
Hose, air brake	ton 10.50 / 11.50
Garden, rubber covered	ton 10.00 / 11.00
Steam and water, soft	ton 10.00 / 11.00
No. 1 red	lb. .01 1/2 / .01 3/4
No. 2 red	lb. .01 / .01 1/4
White druggists' sundries	lb. .01 1/4 / .01 1/2
Mechanical	lb. .01 1/4 / .01 1/2

Hard Rubber

No. 1 hard rubber.....lb. .08 3/4 / .09

United States Latex Imports

	Pounds	Value
1932		
Jan.	742,135	\$40,613
Feb.	983,186	52,182
Mar.	875,969	44,585
Apr.	1,233,497	46,397
May	314,941	27,449
June	691,155	28,800
July	488,483	37,327
Aug.	1,208,575	59,178
Sept.	727,125	46,380
Oct.	1,592,028	69,053
Nov.	1,177,747	70,785
Dec.	1,415,453	79,250
1933		
Jan.	1,882,928	\$100,900
Feb.	821,035	46,037
Mar.	1,207,608	55,731
Apr.	1,778,323	80,749
May	1,644,296	71,008
June	1,353,703	66,827
July	1,383,459	85,636
Aug.	2,589,838	196,138
Sept.	3,008,286	267,516

Data from United States Department of Commerce, Washington, D. C.

MICRONEX

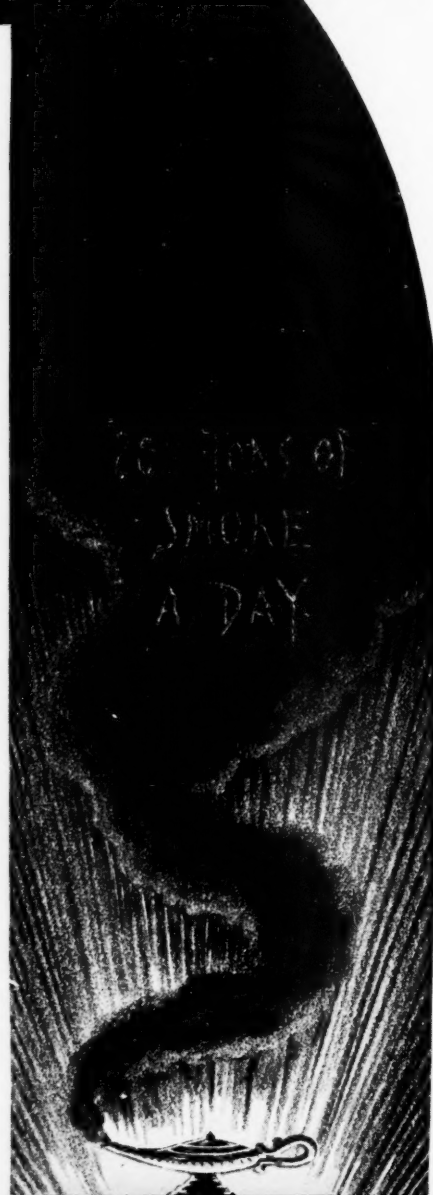
CARBON BLACK is too important — and uncontrolled black too temperamental—for the careful compounder to take chances.

MICRONEX is rubber tested. There is a reason why more tires are made with MICRONEX than with any other black.

BINNEY & SMITH CO.

Specialists in CARBON BLACKS, STEARIC ACID, IRON OXIDES,
MINERAL RUBBER and other products for the RUBBER INDUSTRY

41 East 42nd St., New York, N. Y.



*The Magic Lamp
Your Protection
for Over 50 Years*

COMPOUNDING INGREDIENTS

THE general condition of the market for compounding ingredients is notably duller than 6 months ago, since which time rubber goods production has declined to moderate levels in most lines, especially in tires and tubes. High-class accelerators and antioxidants are being favored as a matter of good economy. The tonnage of ordinary fillers has markedly decreased and will not go up until manufacturing activity revives sharply.

Antox is a mobile liquid non-blooming antioxidant specially appreciated by manufacturers of rubber footwear because it prevents "frosting" of the goods. Another outstanding characteristic is its effectiveness as a preventive of heat deterioration.

CARBON BLACK. The rubber trade has been buying for investment in anticipa-

tion of an increase in price of 1¢ a pound on contracts for next year to be offered after the carbon black code is settled.

CHROMIUM OXIDE. The green pigment situation remains unaltered except that demand has slackened considerably. Present market prices are very close to actual production cost, without considering overhead and sales expense.

FACTICE. The demand for the various grades is steady and seasonal. The price is unchanged.

LITHARGE. The market is dull, with prices steady. Quantity discounts were revised during the month.

LITHOPONE. Contracts are offered for the first half of 1934 at 4½ to 4¾¢ per pound for bags and barrels respectively in carload lots.

MINERAL RUBBER. Current prices for

Genasco hydrocarbon are firm, but an advance is anticipated for 1934.

RUBBER SOLVENT. Early in November the price was advanced 7½¢ to 6½¢ per gallon, the highest for the year, on both heavy and light grades at Group 3 refineries. This price was later reduced to 61½¢ per gallon.

STEARIC ACID. The market is steady; demand fair, and price unchanged.

TITANIUM PIGMENTS. Announcement has been made of changes in the designation of titanium pigments as follows: Hereafter titanium dioxide will be known as Titanox-A; titanium barium pigment as Titanox-B; and titanium calcium pigment as Titanox-C. Current quotations announced November 15 will remain effective to the end of June, 1934, unless unforeseen conditions necessitate earlier revision.

New York Quotations

November 25, 1933

Prices Not Reported Will Be Supplied on Application

Abrasives

Pumicestone, p.wd.lb. \$0.02½/\$0.04
Rottenstone, domesticton 23.50 /28.00

Accelerators, Inorganic

Lime, hydratedton 20.00
Litharge (commercial)lb. .06¾
Magnesia, calcined, heavy..lb. .04 / .04½
carbonatelb. .06 / .06¾

Accelerators, Organic

A-1 (Thiocarbamilid)lb. .21 / .25
A-5-10lb. .33 / .36
A-7lb. .53 / .65
A-11lb. .60 / .75
A-16lb. .55 / .65
A-19lb. .56 / .75
A-32lb. .70 / .80
Accelerator 49lb. .38 / .48
Aldehyde ammonialb. .65 / .70

Altax
Anhydroformaldehyde-para-
toluidinelb.
Baraklb.
Butenelb.
Captaxlb.
Crylenelb.
pastelb.
DBAlb.
Di-esterex N.lb.
DOTGlb. .42 / .52
DPGlb. .33 / .40
du Pont 808lb.
833lb.
Ethylidine anilinelb.
Formaldehyde anilinelb. .37½ / .40
Gumtallb. .42 / .51
Heptenelb.
baselb.
Hexamethylenetetraminelb. .37
Lead oleate, No. 999.lb. .10
Witcolb. .11
Lithexlb.
Monexlb.
Novexlb.
Pipsol Xlb. 3.55 / 4.00
Plastonelb.
R-2lb. 1.55 / 1.90
baselb. 4.55 / 5.00
R & H 40.lb.
50-Dlb.
Safexlb.
Super-sulphur No. 1lb.
No. 2lb.
Tetrone Alb.
Thiolb.
Thiocarbamilidlb. .20
Thionexlb.
Trimenelb.
baselb.
Triphenyl guanidinelb. .58 / .60
Tuadalb.
Urekalb. .62 / 1.00
Clb. .58 / .69
Vulcanexlb.

Vulcanollb.
Vulconelb.
ZBXlb.
Z-88-Plb. \$0.48 / \$0.60
Zimatelb.

Acids

Acetic 28% (bbils.)....100 lbs. 2.91 / 3.16
glacial (carbonyls)100 lbs. 10.52 / 10.77
Sulphuric, 66°ton 15.50

Age Resisters

Age-Rite Gellb.
powderlb.
resinlb.
whitelb.
Albasanlb.
Antoxlb.
BLElb.
Fictol Alb. .54 / .60
Blb. .54 / .60
Hlb.
Neozonelb.
Oxymonelb. .66 / .90
Parazonelb.
Permaluxlb.
Resistoxlb. .52 / .65
VGBlb.
Zalbalb.

Antiscorch Material

UTBlb.

Antisun Materials

Heliozonelb.
Sunprooflb.

Binders, Fibrous

Cotton flock, dark.....lb. .09 / .11½
dyedlb. .50 / .80
whitelb. 1.1½ / .17
Rayon flock, colored ..lb. 1.60 / 1.75
whitelb. 1.40

Colors

BLACK

Bone, powderedlb. .05½ / .15
Droplb. .05½ / .17
Lampblack (commercial) ..lb. .08 / .12

BLUE

Prussianlb. .35 / .37
Tonerslb. .80 / 3.50
Ultramarinelb. .07 / .10

BROWN

Mapicolb. .13
Sienna, Italian, raw, p.wd..lb. .04½ / .11

GREEN

Chrome, lightlb. .23 / .25½
mediumlb. .26 / .27½
oxidelb. .19 / .21
Guignet's (bbils.) f.o.b. Easton lb. .70
Tonerslb. .85 / 3.50

ORANGE

Tonerslb. \$0.40 / \$1.60

ORCHID

Tonerslb. 1.50 / 2.00

PINK

Tonerslb. 1.50 / 4.00

PURPLE

Tonerslb. .60 / 2.00

RED

Antimony
Crimson, R. M. P. No. 3..lb. .46
Sulphur freelb. .48
7-Alb. .33
Z-2lb. .20
Iron Oxides
Rub-red (bbils.) f.o.b.lb. .08¾
Eastonlb. .08¾
Mapicolb. .08¾
Tonerslb. .80 / 2.00

WHITE

Lithopone (bags)lb. .04½ / .04¾
Albalithlb. .04½ / .04¾
Cryptone No. 19lb. .06 / .06¾
CB No. 21lb. .06 / .06¾
Titanox-Alb. .17 / .18¾
Blb. .06 / .06½
Clb. .06 / .06½

Zinc Oxide

Black label (lead free) ..lb. .05¾
F. P. Florence, green
seallb. .09¾ / .09¾
red seallb. .08¾ / .08¾
white seal (bbils.)lb. .10¾
Green label (lead free) ..lb. .05¾
seal, Anacondalb. .09¾ / .10¾
Horsehead (lead free) brand
Selectedlb. .05¾ / .06
Speciallb. .05¾ / .06
XXlb. .05¾ / .06
redlb. .05¾ / .06
Kadox, black labellb. .09¾ / .09¾
blue labellb. .08¾ / .08¾
red labellb. .07¾ / .07¾
Lehigh (lead)lb. .08¾ / .08¾
Red label (lead free)lb. .05¾
seal, Anacondalb. .08¾ / .09¾
Standard (lead)lb. .05¾ / .05¾
U. S. P. (bbils.)lb. .12¾
White seal, Anaconda ..lb. .10¾ / .11¾
XX zinc sulphide (bbils.) ..lb. .13

YELLOW

Chromelb. .15
Mapicolb. .09¾
Ochre, domesticlb. .01¾ / .02¾
Tonerslb. 2.50

Factice—See Rubber Substitutes

Fillers, Inert

Asbestineton 14.00
Barytes (f.o.b. St. Louis) ..ton 23.00
off colorton
whiteton

Blanc fixe, dry, precip.	ton	\$70.00	/ \$75.00
pulp	ton	42.50	/ 45.00
Infusorial earth	lb.	.03	
Kalite No. 1	ton		
No. 3	ton		
Suprex, heavy	ton	45.00	
white, extra light	ton	60.00	
Whiting			
Chalk, precipitated	lb.		
Domestic	ton		
Hakuenka	lb.		
Paris white, English cliff-			
stone	100 lbs.		
Sussex	ton		
Witco	ton	20.00	
Wood flour (f.o.b. New York)			
.....	ton	27.00	/ 55.00

Fillers for Pliability

Flex	lb.		
Pumponex	lb.		
P-33	lb.		
Thermax	lb.		
Velvetex	lb.		

Finishes

IVCO lacquer, clear	gal.	2.50	/ 2.80
colors	gal.	2.60	/ 3.25
Mica, amber	lb.	.03 1/2	/ .05
Rubber lacquer No. 106	gal.	3.00	
Starch, corn, pwd.	100 lb.	2.81	/ 3.01
potato	lb.	.05 1/4	/ .06
Talc, dusting	ton	20.00	
Pyrex A	ton		

Latex Compounding Ingredients

Accelerator 552	lb.		
Aquarex	lb.		
Areco	lb.	.28	/ .40
Catalpo	ton		
Colloidal color pastes	lb.		
sulphur	lb.		
zinc oxide	lb.		
Disinfectants	lb.		
Dispersaid	lb.	1.50	
Dispersed Antox	lb.		
factice	lb.	.26	
Emo, brown	lb.	.13	
white	lb.	.13	
Emulsified Heliozone	lb.		
Neozone L	lb.		
Palmitol	lb.	.08	
Tepidone	lb.		

Mineral Rubber

Genasco (fact'y)	ton	30.00	/ 32.00
Gilsonite (fact'y)	ton	37.14	/ 39.65
Granulated M. R.	ton		
Hydrocarbon, granulated ..	ton	40.00	/ 42.00
hard	ton		
Parmr Grade 1	ton	23.00	/ 28.00
Grade 2	ton	23.00	/ 28.00

Mold Lubricants

Rusco mold paste	lb.	.12	/ .30
Sericite	ton		
Soapbark (cut)	lb.	.07	/ .08
Soapstone	ton		

Oils

Castor, blown	lb.	.12 1/4	/ .12 3/4
Ponpyseed	gal.	1.45	/ 1.60
Red, distilled (bbis.)	lb.	.07	/ .07 1/2

Protective Colloid

Casein, domestic	lb.	.12 1/2	/ .13
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Reinforcers

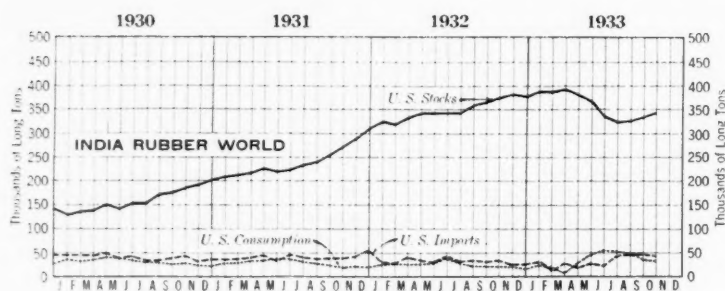
Carbon Black			
Aerifloated arrow specifica-			
tion	lb.	.02 3/4	
Century	lb.	.0272	
Certified, Cabot, c. l.			
f. o. b. works, bags	lb.	.0272	
c. l. f. o. b. works,			
cases	lb.	.04 1/4	
l. c. l. f. o. b. works	lb.	.04 3/4	/ .06 1/2
Spheron (Dense Dustless			
Black) c. l. f. o. b.	lb.	.0272	
works	lb.	.0272	
Disperso	lb.	.0272	
Dixie brand	lb.	.0272	/ .06 1/2
Kosmos brand	lb.	.0272	/ .06 1/2
Micronex	lb.		
Ordinary (compressed or			
uncompressed)	lb.		

Clays

Blue Ridge, dark	ton		
China	ton	9.00	
Dixie	ton		
Langford	ton		
Par	ton		
Perfection	ton	7.00	/ 9.00
Standard	ton		
Suprex No. 1	ton	10.00	/ 24.00
No. 2, dark	ton	7.50	
Glue, high grade	lb.	.23	/ .28

Reodorants

Amora A	lb.		
B	lb.		
C	lb.		
D	lb.		
Para-Dors	lb.		
Rodo	lb.		

IMPORTS, CONSUMPTION, AND STOCKS

United States Stocks, Imports and Consumption

United States and World Statistics of Rubber Imports, Exports, Consumption, and Stocks

	U. S. Net Imports*	U. S. Consumption	U. S. Stocks on Hand†	U. S. Stocks Afloat†	United Kingdom Stocks‡	Singapore and Penang, Etc., Stocks‡	World Production (Net Exports)‡	World Consumption Estimated‡	World Stocks‡§
Twelve Months									
1930	488,343	375,980	200,998	56,035	118,297	45,179	821,815	684,993	366,034
1931	495,163	348,986	322,825	40,455	127,103	55,458	797,441	668,660	495,724
1932	400,787	322,000	379,000	38,360	92,567	36,802	709,860	670,250	518,187
1933									
January	31,110	22,906	385,811	32,539	89,050	35,746	63,951	52,120	521,173
February	18,875	21,638	381,794	32,898	90,172	34,354	56,056	54,900	518,166
March	27,879	18,047	390,135	29,531	94,565	34,089	61,932	59,100	518,812
April	19,459	26,226	382,167	30,745	95,066	33,520	57,180	61,300	510,753
May	27,556	44,580	364,623	43,342	98,538	37,876	67,050	76,840	501,037
June	22,729	51,326	333,954	63,608	102,451	46,412	62,330	74,110	482,817
July	44,290	50,184	326,609	57,435	99,859	53,179	74,078	76,200	479,646
August	44,802	44,939	325,418	53,084	96,623	51,110	73,954	79,230	473,151
September	47,352	35,686	334,637	57,255	94,972	51,456	75,875	74,670	481,064
October	43,016	31,906	343,579	58,568	.....	.....	.....	.....	.....

*Including liquid latex, but not guayule. †Stocks on hand the last of the month or year. ‡W. H. Rickinson & Son's figures. §Stocks at the 3 main centers, U. S. A., U. K., Singapore and Penang.

Rubber Substitutes or Factice

Amberex	lb.	\$0.13 1/2	
Black	lb.	.06	/ \$0.08
Brown	lb.	.06	/ .11
White	lb.	.07 1/2	/ .12

Softeners

Burgundy pitch	lb.	.05	
Cycline oil	gal.	.15	/ .28
Fluxol	ton		
Hardwood pitch, c. l.	ton	24.00	/ 25.00
Palm oil (Witco)	lb.	.08	
Petrolatum, light amber ..	lb.	.02 1/2	/ .03 1/2
Pine tar	gal.	.30	
Plastogen	lb.		
Rosin oil, compounded	gal.	.35	
Rubtack	lb.	.10	
Tackol	lb.	.085	/ .18
Tonox	lb.		
Witco Flux	gal.	.08	

Solvents

Benzol (90% drums)	gal.	.27	
Bondogen	gal.		
Carbon bisulphide (drums) ..	lb.	.05 1/2	/ .12
tetrachloride	lb.	.05 1/4	/ .06
Turpentine, steam distilled ..	gal.	.46	/ .47

Stabilizers for Cure

Laurex, ton lots	lb.		
Stearax B	lb.	.08 1/2	/ .10
Stearic acid, dbl. pres'd ..	lb.	.08	/ .09
Zinc stearate	lb.	.10	/ .14

Vulcanizing Ingredients

Sulphur			
Chloride, drums	lb.	.03 1/2	/ .04
Flowers, extrafine			
refined, U.S.P.	100 lbs.		
Rubber	100 lbs.	1.85	/ 2.45
Telloy	lb.		
Vandex	lb.		

(See also Colors—Antimony)

HAS YOUR SUBSCRIPTION TO INDIA RUBBER WORLD expired? If so, renew at once not to miss anything new and important.

CONSUMPTION of crude rubber by United States manufacturers for October totaled 31,906 long tons, against 35,686 long tons for September, a decrease of 10.6% but 43.2% over October, 1932, figures of 22,286 long tons, according to the R.M.A. Consumption for the first 10 months of 1933 amounted to 347,439 long tons, compared with 290,754 long tons for the same period in 1932.

Crude rubber imports for October were 43,016 long tons, 9.2% under September figures, but 21.3% above those of October, 1932.

The estimated total domestic stocks of crude rubber on hand October 31 were 343,579 long tons, against September 30 stocks of 334,637 long tons, an increase of 2.7% over September's stocks, but 4.1% below stocks of October 31, 1932.

Crude rubber afloat for the United States ports on October 31 were 58,568 long tons, compared with 57,255 (revised) long tons afloat on September 30 and 40,176 long tons afloat on October 31, 1932.

London and Liverpool Stocks

	Tons	
Week Ended	London	Liverpool
Oct. 28	37,898	52,969
Nov. 4	37,170	52,818
Nov. 11	36,831	52,910
Nov. 18	36,443	52,466

COTTON AND FABRICS

THE past month produced a steady stream of announcements from Washington which have been received with decidedly mixed feelings. The plan to buy new-mined gold in the world market above the world price; recognition of Soviet Russia; near-panics abroad where investors were fleeing from the dollar, converting their investments into foreign issues; new highs in sterling peace-time prices; and a dollar shrinking to 60¢, brought gold news sharply to the fore and kept it there.

The result of these various factors on the price of cotton and other commodities was a general increase, but it was not so sharp or positive as expected. Too much opposition has arisen to the method both here and abroad for the full benefits of the experiment to have full sway.

The rise in the price of cotton has undoubtedly come from the inflation tactics since normal factors are indecisive. The November crop report was higher than the previous month's. Although not up to maximum expectations, it was above last year's, and that with the 25% reduction in acreage included.

The multiplicity of influences at present operating on cotton makes forecast difficult, and until some of these problems can be determined and until opinion is more united on the effect of the dollar-depreciation plan, it is hard to say how cotton prices will act.

Week ended October 28. The President's new gold policy and his avowed intention of raising commodity prices helped cotton quotations early in the week. Later, heavy hedge figures, doubt as to the number who would accept the administration's plan for 40% reduction next year, and the failure of the gold purchases to stimulate prices more, all served to weaken quotations somewhat. But for the week a gain was shown of from 31 to 37 points.

December sold at 9.56¢ at the end of the week, against 9.21¢ the week before; March 9.77 against 9.42; and July 10.01 against 9.70.

The gold plan was to purchase newly mined gold in this country above the world market price in an attempt to depreciate the value of the dollar abroad and raise prices here. Many observers, pointing to the small amount of new gold reaching the market yearly, thought that a much more comprehensive effort was required for the result desired.

Cotton ginnings to October 18 were 8,605,580 running bales, compared with 7,309,094 a year ago to the same date. These large figures led to estimates of a higher crop on November 1, with one firm putting the next crop at 13,740,000 bales, 800,000 above the government's last report.

Forwardings were down last week to

COTTON BULL POINTS

1. October consumption was 503,873 bales of lint against 499,486 in September and 501,893 in October, 1932.
2. Cotton on hand October 31 in consuming establishments and warehouses totaled 10,835,000 bales against 11,091,000 a year ago.
3. October exports were 1,046,524 bales of lint against 869,244 in September and 1,006,023 in October, 1932.
4. The 10¢ price reached this month induced farmers to sell and helped reduce the stocks of cotton held in the South.
5. An additional \$48,000,000 has been set aside for loans of \$20 a bale to holders of options on 2,400,000 bales of government cotton.
6. World consumption of American cotton last year was 2,000,000 bales above the year before and 1,200,000 above domestic production.
7. Since the government announced its intention to lease the land which farmers will abandon in the 40% reduction plan, the outlook or success of the plan is better.
8. Recognition of Soviet Russia opens the way for negotiations for the sale of cotton to it.

COTTON BEAR POINTS

1. The latest government report put the 1933 crop at 13,100,000 bales, up 100,000 bales from last year despite the acreage-reduction campaign.
2. Forwardings to United States mills in November declined below last year's figures.
3. Sales of cotton cloth this month have turned quiet, with prices easing off.
4. The price increase of raw cotton this month made many growers reluctant to enter an acreage reduction plan for next spring.
5. Imports of American cotton to Japan in the first half of 1933 dropped to 1,682,000 bales, from 2,492,000 in the previous year; while imports of Indian cotton increased.

213,000 bales from 240,000 the preceding week; but since a seasonal decline is usual, the figures were interpreted favorably.

Week ended November 4. After last week's trading cotton prices were from one to 3 points higher than last Saturday. This slight change was characteristic in every trading day; trading was light in a narrow market with dealers and traders holding off from the market for the present.

The December position closed at 9.57¢, compared with 9.56¢ the week before; January 9.63 against 9.62; March 9.79 against 9.77; May 9.91 against 9.90; July 10.05 against 10.01.

Market news has it that a goodly number of holders of this year's crop are sellers on each price rise. Estimates of those applying for a government loan of \$50 a bale under the 40% crop-reducing plan range from 40 to 75% of the growers in the eastern belt. The percentage has increased in the last week owing to the fact that the government is now willing to lease abandoned land on a basis similar to last year, which has influenced more growers to adopt the idea.

So far the governmental monetary policy has done nothing but dry up demand. No one except a few at Washington know what the next step will be, and traders are wary where they tread in fear of a misstep. This attitude accounts for the desultory market last week.

Another factor restraining the market is the imminence of the next government crop report which will estimate the crop as of November first. Private

figures point to higher estimates, a number going as high as 13,500,000 bales. Foreign cotton is competing strongly with American which is on a comparatively higher basis. Egyptian and Chinese cotton have been used for certain American growths because they were cheaper.

Sales of cloth goods were reported quiet during the last week, and forwardings dropped to 175,000 bales, against 213,000 the previous week and 176,000 a year ago.

A revision in the application of the processing tax by the Treasury to include all goods in the first stage of processing on August 1, and to floor stocks in the second stage of production on August 1, was designed to bring in an additional \$7,000,000 or \$8,000,000 immediately, to be deducted at the termination of the law.

Week ended November 11. On Monday, prior to the Election Day holiday and the publication of the November crop report, the market lost 20 points, and the December position hit 9.35¢, the lowest level since the administration launched its new gold policy. Before the week was over, however, the December position had risen to 9.82¢ under the influence of strong foreign buying, a depreciated currency, and a crop report less bearish than expected. Net gains for the week ranged from 25 to 29 points.

December closed at 9.82¢ on Saturday, compared with 9.57¢ the week before; January 9.92 against 9.63; March 10.05 against 9.79; May 10.19 against 9.91; July 10.34 against 10.05; and October 10.53 against 10.24.

The government put the crop at 13,100,000 bales as of November 1, an increase of 215,000 bales above the previous report of 12,885,000 bales on October 1. Private estimates had averaged 13,026,000 bales, almost 700,000 above their last estimate, and the average of the members of the Exchange was 13,254,000 bales, also 700,000 above their last estimate. Thus the government increase of only 215,000 bales was 500,000 short of the figure expected. Most of the increase was in Texas and Oklahoma. The present crop is now almost 100,000 bales above that of last year, but about 4,000,000 bales below that of 1931.

The rise in prices that followed the report was only partly due to the crop figure. A large holding movement is said to be under way in the South, with farmers making increasing application for loans under the A. A. A. plan for 40% reduction of next year's acreage.

With a holding movement strong here, foreign buying increased strongly. The reason is our depreciated currency. At current rates of exchange where the dollar is worth about 61.75¢ in relation to the franc and where sterling hit a new peace-time high of \$5.15, the De-

cember cotton quotation, at 9.83¢ is worth 6.13 in the gold equivalent, compared with 6.36 a year ago. For the same price they paid for one pound of cotton a year ago, English spinners are now able to buy a pound and a half.

Forwardings to United States mills declined 25,000 bales last week, but the crop report by the government strengthened the gray goods market with sales for next year's delivery, indicating a movement for protection against higher prices that might be caused by a depreciated currency.

Week ended November 18. On Monday cotton prices crossed the 10¢ mark for the first time since late September. The price increased until Friday and Saturday when a reaction set in due to uncertainty over the government's gold plan. Recognition of the Soviet government caused little change in prices, serving merely to steady them in the short Saturday session.

The steady and sharp drop in the dollar with consequent improvement in commodity and stock prices lifted cotton quotations to high levels for the movement. But when the gold price posted by the government remained unchanged for 5 days, all sorts of rumors began to circulate. The principal talk was that the dollar would be stabilized at about its present value of 61% of the former gold dollar, and that the United States and Great Britain would make an agreement guarding against flights of capital from either country. When the dollar went up on Friday and selling increased because of price-pegging rumors, cotton lost most of the week's gains, although final figures were 12 to 17 points better than the week before.

December closed at 9.97¢, compared with 9.82¢ the week before; January 10.04 against 9.92; March 10.22 against 10.05; May 10.36 against 10.19; and July 10.49 against 10.34.

The early strength of cotton came partly from the fact that many growers were accepting the \$50 a bale from the government on warehouse receipts instead of selling in the open market. But the 10¢ price prompted those farmers who had not entered into the government plan for loans of 10¢ a pound on cotton and reduction of next year's acreage to sell their cotton at the attractive prices.

October consumption of cotton was 503,873 bales of lint and 66,838 bales of linters, according to the Census Bureau, compared with 499,486 and 76,451 in September and 501,893 and 63,329 in October last year. Total American stocks at the end of the month in consuming establishments and warehouses were 10,835,000 bales, compared with 11,091,000 a year ago. Forwardings to mills of the world so far this season total 4,526,000 bales, compared with 4,042,000 last year. Last week's forwardings, however, were 133,000 bales for United States mills, compared with 152,000 in the preceding week and 153,000 in the same week a year ago. Cotton goods trading was dull during last

week, and prices eased off somewhat.

Week ended November 25. For the first half of the week price changes about

WEEKLY AVERAGE PRICES OF MIDDLING COTTON		
Week Ended		Cents per Pound
Oct. 28		9.75
Nov. 4		9.75
Nov. 11		9.92
Nov. 18		10.23

New York Quotations

November 25, 1933

Drills		Cents
38-inch 2.00-yard	yd.	\$0.15
40-inch 3.47-yard		.09 $\frac{1}{4}$
50-inch 1.52-yard		.22
52-inch 1.90-yard		.17 $\frac{1}{2}$
52-inch 2.20-yard		.16
52-inch 1.85-yard		.18
Ducks		
38-inch 2.00-yard D. F.	yd.	.15
40-inch 1.45-yard S. F.		.21 $\frac{3}{4}$
72-inch 1.05-yard D. F.		.31
72-inch 16.66-ounce		.33 $\frac{1}{2}$
72-inch 17.21-ounce		.34 $\frac{1}{2}$

MECHANICAL		
Hose and belting	lb.	.32 $\frac{1}{2}$

TENNIS		
52-inch 1.35-yard	yd.	.23

*Hollands

GOLD SEAL		
30-inch No. 72	yd.	.19 $\frac{1}{4}$
40-inch No. 72		.21 $\frac{1}{4}$

RED SEAL		
30-inch	yd.	.17
40-inch		.18 $\frac{1}{2}$
50-inch		.24 $\frac{1}{2}$

Osnaburgs		
40-inch 2.34-yard	yd.	.13 $\frac{1}{4}$
40-inch 2.48-yard		.12 $\frac{3}{4}$
40-inch 3.00-yard		.10 $\frac{1}{2}$
40-inch 10-ounce part waste		.15 $\frac{1}{2}$
40-inch 7-ounce part waste		.10 $\frac{1}{2}$
37-inch 2.42-yard		.12 $\frac{3}{4}$

Raincoat Fabrics

COTTON		
Bombazine 60 x 64	yd.	.11 $\frac{1}{4}$
Bombazine 60 x 48		.10 $\frac{3}{4}$
Plaids 60 x 48		.11 $\frac{1}{2}$
Plaids 48 x 48		.10 $\frac{3}{4}$
Surface prints 60 x 64		.12 $\frac{3}{4}$
Surface prints 60 x 48		.12 $\frac{1}{4}$
Print cloth, 38 $\frac{1}{2}$ -inch, 60 x 64		.06 $\frac{1}{2}$
Print cloth, 38 $\frac{1}{2}$ -inch, 60 x 48		.05 $\frac{1}{2}$

SHEETINGS, 40-INCH		
48 x 48, 2.50-yard	yd.	.10 $\frac{1}{4}$
48 x 48, 2.85-yard		.08 $\frac{3}{4}$
64 x 68, 3.15-yard		.10 $\frac{1}{4}$
56 x 60, 3.60-yard		.09 $\frac{1}{2}$
44 x 48, 3.75-yard		.07 $\frac{1}{2}$
44 x 40, 4.25-yard		.06 $\frac{3}{4}$

SHEETINGS, 36-INCH		
48 x 48, 5.00-yard	yd.	.05 $\frac{7}{8}$
44 x 40, 6.15-yard		.04 $\frac{1}{2}$

Tire Fabrics

BUILDER		
17 $\frac{1}{4}$ ounce 60" 23/11 ply Karded peeler	lb.	.38
17 $\frac{1}{4}$ ounce 60" 10/5 ply Karded peeler	lb.	.32

CHAFER		
14 ounce 60" 20/8 ply Karded peeler	lb.	.38
12 ounce 60" 10/4 ply Karded peeler	lb.	.32
9 $\frac{1}{4}$ ounce 60" 20/4 ply Karded peeler	lb.	.39
9 $\frac{1}{4}$ ounce 60" 10/2 ply Karded peeler	lb.	.33

CORD FABRICS		
23/5/3 Karded peeler, 1 $\frac{1}{2}$ " cotton	lb.	.41
23/4/3 Karded peeler, 1 $\frac{1}{2}$ " cotton	lb.	.42
15/3/3 Karded peeler, 1 $\frac{1}{2}$ " cotton	lb.	.42
13/3/3 Karded peeler, 1 $\frac{1}{2}$ " cotton	lb.	.38
7/2/2 Karded peeler, 1 $\frac{1}{2}$ " cotton	lb.	.36
25/5/3 Karded peeler, 1 $\frac{1}{2}$ " cotton	lb.	.48
23/5/3 Karded Egyptian, Egyptian upper cotton	lb.	.51
25/5/3 Combed Egyptian	lb.	.56

LENO BREAKER		
8 $\frac{1}{4}$ ounce and 10 $\frac{1}{4}$ ounce 60" Karded peeler	lb.	.32

*Prices for 1,200 yards of a width or over.

evened off. The first rise in the gold price since last Tuesday was made on the opening day with a consequent rise in prices, although trading was mild. Hedging operations fell too, but pre-notice liquidation of December contracts halted an early advance in price on Tuesday.

Ginnings were announced at 11,250,851 running bales, up to November 14, which was above the 1932 crop ginnings, but below those of the 3 previous years, and less than expected on the market.

The Commodity Credit Corp. announced that an additional \$48,000,000 would be distributed to southern farmers in 4¢ loans on the 2,400,000 bales of cotton covered by options which growers have taken in lieu of cotton which they retired from production. The options are for 6¢ a pound and with the additional 4¢ will bring the rate to 10¢. Liquidation of all loans is expected by August 1, 1934. Marketing will be conducted by the corporation, and growers will be charged 4% interest.

On Thursday weakness in other markets and active liquidation of December contracts caused a slow but steady decline in cotton. The next day, however, the upturn in stocks and a sharp rise in dollar exchange besides the completion of several weeks' liquidation of the December position sent prices up. In the light turnover of Saturday's short session, cotton was easier, with slight losses.

Closing prices follow: December 9.89¢ against 9.97¢ last Saturday; January 9.95 against 10.04; March 10.09 against 10.22; May 10.24 against 10.36; and July 10.34 against 10.49.

Cotton Fabrics

DUCKS, DRILLS, AND OSNABURGS. The market is improving somewhat over its condition a month ago, shown by an increasing volume of demand for merchandise contracts to cover forward delivery requirements. Prices remain unsatisfactory from the standpoint of manufacturers. The recent rise of cotton by about \$5 a bale is expected to tighten the prices of fabrics for rubberizing.

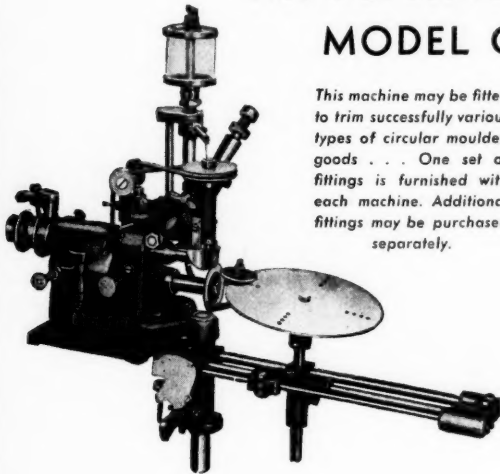
RAINCOAT FABRICS. The market for raincoat fabrics is unchanged. It is featured only by the seasonal search for new styles.

SHEETING. Activity remains at a very low ebb on both print cloths and sheetings, with a good deal of uncertainty shown by both buyers and sellers. Sales through the first quarter of 1934 have been very small. Sellers seem to prefer to wait until the usual spring buying comes into the market before contracting their production at prevailing prices through the first quarter of the coming year.

TIRE FABRICS. Decreases of 2 to 3¢ a pound are noted in current quotations over those of one month ago on all grades of tire fabrics with the exception of the following cord fabrics: 15/3/3 karded peeler, 1 $\frac{1}{2}$ inch, and 7/2/2 karded peeler, 1 $\frac{1}{2}$ inch.

USMC TRIMMING MACHINE

MODEL C

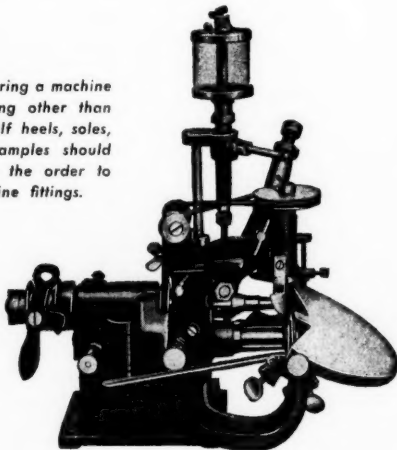


This machine may be fitted to trim successfully various types of circular moulded goods . . . One set of fittings is furnished with each machine. Additional fittings may be purchased separately.

A new and improved machine for trimming the overflow on all types of moulded rubber heels, soles, taps, and miscellaneous moulded rubber goods of similar construction.

Oil is the standard means of lubrication. A water tank is shipped, only when specifically ordered, at an extra charge.

When ordering a machine for trimming other than regular half heels, soles, or taps, samples should accompany the order to determine fittings.



UNITED SHOE MACHINERY CORPORATION

140 Federal Street, Boston, Mass.

Auburn, Maine.....108 Court	Marlboro, Mass.....11 Florence
Brookton, Mass.....93 Centre	Milwaukee, Wis. 922 No. Fourth
Chicago, Ill. 500 South Franklin	New Orleans, La. 216 Chartres
Cincinnati, O. 407 East Eighth	New York, N. Y. 110 Fifth Ave.
Haverhill, Mass.....145 Essex	Philadelphia, Pa. 221 No. 13th
Johnson City, N. Y. 276 Main	Rochester, N. Y. 130 Mill
Lynn, Mass.....306 Broad	St. Louis, Mo. 1423 Olive
San Francisco, Calif. ....859 Mission	

Regular and Special Constructions of COTTON FABRICS

**Single Filling Double Filling
and**

ARMY Ducks

HOSE and BELTING

Ducks

Drills

Selected

Osnaburgs

Curran & Barry

**320 BROADWAY
NEW YORK**

FINANCIAL

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Boston Woven Hose & Rubber Co.	Pfd.	\$3.00 s.a.	Dec. 15	Dec. 1
Dominion Rubber Co., Ltd.	Pfd.	\$1.75 q.	Oct. 16	Oct. 10
Firestone Tire & Rubber Co.	6% Pfd.	\$1.50 q.	Dec. 1	Nov. 15
Gates Rubber Co.	Pfd.	\$1.75 q.	Dec. 1	Nov. 15
Goodyear Tire & Rubber Co.	7% Pfd.	\$0.50 q.	Jan. 1	Dec. 1
Norwalk Tire & Rubber Co.	Pfd.	\$0.87½ q.	Jan. 1	Dec. 31
Raybestos-Manhattan, Inc.	Com.	\$0.15 q.	Dec. 15	Nov. 29

New Jersey Zinc Co.

The New Jersey Zinc Co., 160 Front St., New York, N. Y., reported a net income of \$2,885,290 for the 9 months ended September 30, after charges and taxes. This was equal to \$1.47 a share on 1,963,264 capital shares and compared with \$1,595,329, or 81¢ a share, in the corresponding period last year. For the quarter ended September 30 the net income was \$1,514,909, or 77¢ a share, which compared with \$933,002, or 48¢ a share, in the preceding quarter and with \$516,330, or 26¢ a share, in the September quarter in 1932.

Anaconda Wire & Cable Co.

Anaconda Wire & Cable Co., 25 Broadway, New York, N. Y., for the 9 months ended September 30, reports a net loss after depreciation, taxes, and other charges, of \$302,297, compared with \$932,834 loss last year. For the quarter ended September 30 the company reports net profit after same charges, of \$147,292, equal to 35¢ a share on 421,981 no-par capital shares outstanding on December 31, 1932. This contrasted with net loss of \$65,009 in the preceding quarter and \$372,992 loss in the third quarter of 1932.

Raybestos-Manhattan, Inc.

Raybestos-Manhattan, Inc., Bridgeport, Conn., for the 9 months ended September 30 announced a net profit after depreciation, taxes, and other charges of \$694,777, equal to \$1.08 a share on 642,900 capital shares, contrasted with a net loss of \$185,810 in 1932. For the quarter ended September 30 the firm reported a net profit after the same charges of \$465,380 or 72¢ a capital share, against \$292,825 or 46¢ a share in the preceding quarter and net loss of \$68,210 in the third quarter last year.

Norwalk Tire & Rubber

Norwalk Tire & Rubber Co., Norwalk, Conn., announced for the fiscal year ended September 30 a net income after charges, reserves, and taxes of \$73,556, equal, after preferred dividend requirements, to 21¢ a share on 197,705 common shares, compared with a net profit of \$119,734, or 44¢ a share, on the common stock in the previous fiscal year. Current assets on September 30 were \$882,779, against \$805,593 the year before. Current liabilities were \$126,145, compared with \$79,748.

United Carbon Co.

United Carbon Co., Charleston, W. Va., and subsidiaries showed for the 9 months ended September 30 a profit after taxes, depreciation, and depletion of \$479,647, against \$138,675 profit in 1932. For the quarter ended September 30 the company had a profit after the same charges of \$178,916, against \$171,760 profit in the preceding quarter and \$34,039 profit in the third quarter of 1932. Capital stock on June 30 last consisted of 17,356 \$100 par 7% preferred and 370,127 no-par common shares.

Monsanto Chemical Co.

Monsanto Chemical Co., St. Louis, Mo., reports third-quarter net earnings of \$680,757, equivalent to \$1.57½ a share, compared to 47¢ a share earned in the same quarter last year. The current 9 months' earnings were \$1,519,704, or \$3.51½ a share, compared to \$736,042, or \$1.71½ a share for the same period in 1932.

According to President Edgar M. Queeny, the third-quarter earnings are the best in the company's history. He stated, however, that they do not re-

flect higher wage rates and higher raw material costs now in effect or in prospect.

Earnings for the quarter permitted retirement in anticipation of maturity of \$200,000 of the company's bonded indebtedness. In the current 9-month period the company's net property account has increased more than \$600,000, and its investment account more than \$750,000. Reserves for depreciation increased \$555,000.

Thermoid Co.

Robert J. Stokes, president of the Thermoid Co., Trenton, N. J., released a financial statement of the company and wholly owned subsidiaries for the first 6 months of 1933 showing a net profit of \$409.92, and for the first 9 months a net profit of \$92,537.52 after all charges including depreciation, note interest, and taxes. This compared with a net loss of \$80,970.14 for the first half of 1932 and a net loss of \$127,017.56 for the first 9 months of 1932.

Before interest, depreciation, and taxes the operating profit for the 3-month period ending September 30, 1933, was \$177,870.43.

The above figures do not include Southern Asbestos Co., a 96% owned subsidiary, which showed a profit from operations after all charges, but before depreciation and taxes for the first 9 months of this year of \$36,476.15. For the 3-month period ending September 30 the operating profit before depreciation and taxes was \$17,826.79.

The Rubber Section Safety Contest*

March 1 to August 31, 1933

Final Ranking of All Mills as of August 31, 1933

Final Rank	Member	Man-Hrs. Worked	No. of Disabling Injuries	Frequency Rate
GROUP A, B, AND C (125,001 AVERAGE MONTHLY MAN-HOUR EXPOSURE AND OVER)				
1.	National India Rubber Co., Providence, R. I.	2,206,412	1	0.453
2.	New York Belting & Packing Co., Passaic, N. J.	1,694,072	6	3.542
3.	Glove & Shoe Cos., Naugatuck, Conn.	3,311,941	15	4.529
4.	Gillette Rubber Co., Eau Claire, Wis.	1,137,018	6	5.277
5.	United States Tire Co., Detroit, Mich.	3,961,260	21	5.301
6.	United States Tire Co., Indianapolis, Ind.	1,131,822	6	5.301
7.	Samson Tire & Rubber Co., Los Angeles, Calif.	883,210	5	5.661
8.	The B. F. Goodrich Co., Akron, O.	9,169,721	92	10.033
9.	The Miller Rubber Co., Inc., Akron, O.	1,512,705	24	15.866
10.	Pennsylvania Rubber Co., Jeannette, Pa.	1,275,901	24	18.810
11.	Gates Rubber Co., Denver, Colo.	1,109,288	51	45.975
Group A, B, and C Total		27,393,350	251	9.163
GROUP D AND E (UNDER 125,000 AVERAGE MONTHLY MAN-HOUR EXPOSURE)				
1.	Fabric Fire Hose Co., Sandy Hook, Conn.	42,482	0	.0
2.	Canadian Goodrich Co., Ltd., Kitchener, Ont.	645,627	2	3.098
3.	Pacific Goodrich Rubber Co., Los Angeles, Calif.	628,164	4	6.368
4.	National India Rubber Co., Bristol, R. I.	238,515	2	8.385
5.	Corduroy Rubber Co., Grand Rapids, Mich.	573,704	5	8.715
6.	U. S. Rubber Reclaiming Co., Inc., Buffalo, N. Y.	219,324	2	9.119
7.	Hewitt-Gutta Percha Rubber Corp., Buffalo, N. Y.	298,736	3	10.042
8.	Naugatuck Chemical Co., Naugatuck, Conn.	563,870	6	15.961
9.	American Rubber Co., E. Cambridge, Mass.	679,104	13	19.143
10.	Mechanical Fabric Co., Providence, R. I.	86,495	2	23.123
11.	United States Rubber Co. (Dev. Dept.), Passaic, N. J.	75,300	2	26.560
12.	The Philadelphia Rubber Works Co., Akron, O.	208,524	10	47.956
The Richardson Co., New Brunswick, N. J.		.....	..	.....
Group D and E Total		4,259,845	54	12.677
GRAND TOTAL		31,653,195	305	9.636

*Conducted by National Safety Council, Chicago, Ill.

†Were awarded trophies.

‡Report not complete.

CLASSIFIED ADVERTISEMENTS

SITUATIONS WANTED

CHEMIST, B.S.C., AGE 37, MARRIED, 12 YEARS' EXPERIENCE in alkalis, heavy chemicals, organic accelerators and analyses, rubber and rubber reclaiming, etc. Desires permanent position in rubber or allied industry. Address Box No. 296, care of INDIA RUBBER WORLD.

FACTORY SUPERINTENDENT, 18 YEARS' EXPERIENCE in the manufacture of mechanical goods, tubes, and hard rubber, desires connection with responsible firm. A-1 references. Address Box No. 301, care of INDIA RUBBER WORLD.

CALENDER MAN WOULD LIKE POSITION AS CALENDER MAN or mill room foreman. Have 15 years' experience in running cords, ducks, druggists' sundries, and all kinds of pure gums, and treads. Have been mill room foreman in 3 large rubber plants. Address Box No. 303, care of INDIA RUBBER WORLD.

CHEMIST, B.S.C., 5 YEARS IN RUBBER-LABORATORY AND plant. Thorough training in mill room work and control. Nine years' varied chemical experience. Address Box No. 304, care of INDIA RUBBER WORLD.

FACTORY MANAGER AND TECHNICAL DEVELOPMENT ENGINEER, qualified by many years' experience in hard rubber, mechanicals, sundries, and plastics with recognized concerns, invites correspondence with reliable manufacturer in need of such services. Competent compounder, designer, executive, and development man. Address Box No. 305, care of INDIA RUBBER WORLD.

HOSE DEPARTMENT FOREMAN, THOROUGHLY EXPERIENCED in all types wrapped hose, tubing, etc. Can produce results. Address Box No. 306, care of INDIA RUBBER WORLD.

EXPERIENCED SALESMAN, LARGE FOLLOWING ALL KINDS rubber coated fabric trade, looking to represent mill making rubberized goods. Good references. Address Box No. 307, care of INDIA RUBBER WORLD.

EXPERIENCED SALESMAN: MOLDED RUBBER GOODS, LARGE chain store following. Address Box No. 308, care of INDIA RUBBER WORLD.

PARAGON RUBBER CORP.

Kenyon Building
57th Street and 1st Avenue Brooklyn, N. Y.

SPECIALISTS IN MECHANICAL MOLDED RUBBER GOODS

Write for Quotations

BALATA GOLF BALL COVERS

And Sheet Stock

Manufactured from a fine grade of Balata—Properly compounded and deresinated. We guarantee satisfaction to all buyers.

GOULD GOLF BALL CO., Inc., Wakefield, Mass.

UNION TALC COMPANY PURE WHITE TALC

147 Nassau St., New York, N. Y.

SITUATIONS OPEN

WANTED: TIRE EXPERT FAMILIAR WITH ALL DETAILS OF tire manufacture is desired by a well-known Austrian manufacturer. Applicant must be fully experienced in co-pounding tire and tube stocks, processing materials, flat band and core building, heater press and mold vulcanization, testing and inspection. State age, detailed experience, salary expected, and references. Address Box No. 295, care of INDIA RUBBER WORLD.

WANTED: EXPERIENCED RUBBER MAN BY A LARGE PROOFER in the East. We want a man with successful experience in the production of rubberized sueded fabrics. Please write Box No. 297, care of INDIA RUBBER WORLD, stating experience and salary expected.

WANTED: EXPERIENCED CHEMIST, PREFERABLY ONE WITH complete knowledge of sheet rubber sundries and molded rubber commodities. State salary expected and give in detail past experience. Advancement for proper party. Address Box No. 299, care of INDIA RUBBER WORLD.

WANTED: MOLD DEPARTMENT FOREMAN, ONE WITH EXPERIENCE in molding hot water bottles, syringes, etc., also other rubber molded commodities. Must be capable of handling men. Give complete experience in this field, also salary desired. Excellent opportunity for right man. Address Box No. 300, care of INDIA RUBBER WORLD.

WANTED: A THOROUGHLY EXPERIENCED MAN WHO UNDERSTANDS calendering work and compounding rubber for suede fabrics. State experience in detail and salary desired. Address Box No. 309, care of INDIA RUBBER WORLD.

BUSINESS OPPORTUNITIES

AGENCY DESIRED FOR A GENUINE AMERICAN CARBON black for the British Isles by a responsible black manufacturer. It should be a well-known brand suitable for use in rubber, paints, inks, etc., and capable of competing in quality and price with the standard gas blacks on the British market. Address Box No. 298, care of INDIA RUBBER WORLD.

AGENCIES WANTED: EXCELLENT STAFF SALES ENGINEERS, located in Chicago, want to represent high-grade rubber company in Midwest, on commission basis, making items for industrials. Address Box No. 302, care of INDIA RUBBER WORLD.

MACHINERY AND SUPPLIES WANTED

WANTED: USED MIXING MILL 8" x 16" to 10" x 20" IN GOOD condition. Also 3-roll calender 6" x 12" or 13". Send full details. Lee Dental Co., 79 W. Madison St., Chicago, Ill.

Genasco (M.R.) Hydrocarbon

(SOLID OR GRANULATED)

A hard, stable compound—produced under the exacting supervision of an experienced and up-to-date laboratory.

Aging tests have proved Genasco to be always of uniform quality. Shipped to all parts of the world in metal drums. Stocks carried at Maurer, N. J. and Madison, Ill.

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103 BELMONT STREET

QUALITY HEEL MOULDS

BROCKTON, MASS.

MOULDS FOR PLAIN AND SPORT SOLES—MECHANICAL GOODS AND SPECIALTIES

(Advertisements continued on page 71)

British Malaya

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S.W.1, England, gives the following figures for October, 1933:

Rubber Exports: Ocean shipments from Singapore, Penang, Malacca, and Port Swettenham

October, 1933		
To	Sheet and Crepe Rubber and Concentrated Latex Tons	Latex and Revertex Tons
United Kingdom	4,364	167
United States	40,371	778
Continent of Europe	9,543	179
British possessions	466	22
Japan	4,651	68
Other countries	393	..
Totals	59,788	1,214

Rubber Imports: Actual, by Land and Sea

October, 1933		
From	Dry Rubber Tons	Wet Rubber Tons
Sumatra	654	8,154
Dutch Borneo	587	4,894
Java and other Dutch islands	330	40
Sarawak	939	20
British Borneo	386	39
Burma	108	3
Siam	428	551
French Indo-China	108	44
Other countries	92	13
Totals	3,632	13,758

Crude Rubber

(Continued from page 58)

Imports were 43,016 tons in October, 9.2% under September, but 21.3% over last October. Stocks on hand on October 31, 343,579 long tons, were 2.7% above September, but 4.1% below those of October 31, 1932.

Stocks afloat totaled 58,568 long tons at the month-end, against 57,255 last month and 40,176 a year ago.

Automobile production last week was the lowest this year since March and the first in 7 months to fall below 1932 figures. Output for the November 11 week was 11,258 units, against 16,107 the preceding week and 13,555 in the same 1932 week. Most producers showed smaller production, and 7 of them closed their assembly lines. The tool and die strikes accounted for part of the decline, but manufacturers are behind on their new models. Production is expected to be renewed on December 1. The volume of retail sales has changed little from preceding weeks.

The uncertain rate of sterling kept dealers and buyers out of the market this week except for a few hedge operations against the price of sterling. Manufacturers have sufficient supplies on hand to wait for the picture to clear and for the dollar to settle at some point; so for the present actual business in the Outside Market is dull. Prices gained about ½¢ in sympathy with the exchange prices.

November-December was 9¢ against 8½¢; January-March 9¼¢ against 8¾¢; April-June 9½¢ against 9¢; and July-September 9¼¢ against 9¼¢.

Week ended November 25. Monday's prices gained 10 to 21 points when the gold price was lifted another 10¢, thus raising the price of sterling, but the market lost all these gains on

Tire Production Statistics

Pneumatic Casings—All Types

	In-ventory	Pro-duction	Total Shipments
1931	6,219,776	38,992,220	40,048,552
1932	6,115,487	32,067,732	32,200,820
1933			
Jan.	5,789,476	1,806,277	2,077,268
Feb.	5,901,557	1,871,498	1,833,970
Mar.	5,831,981	1,630,319	1,673,502
Apr.	5,418,979	2,498,795	2,923,154
May	5,408,132	4,151,433	4,144,138
June	5,291,952	4,879,939	5,044,363
July	5,475,205	4,570,901	4,397,753
Aug.	5,655,659	3,994,887	3,765,668
Sept.	6,075,605	3,199,391	2,802,692

Solid and Cushion Tires

	1931	1932	1933
Jan.	21,956	5,536	6,868
Feb.	6,829	7,920	7,920
Mar.	6,795	6,622	6,622
Apr.	7,149	7,766	7,766
May	9,229	9,256	9,256
June	14,843	14,888	14,888
July	14,956	13,606	13,606
Aug.	16,375	13,450	13,450
Sept.	14,522	13,767	13,767

Inner Tubes—All Types

	1931	1932	1933
Jan.	6,337,570	38,666,376	40,017,175
Feb.	5,399,551	29,513,246	30,328,536
Mar.	4,957,298	1,674,557	2,028,100
Apr.	5,085,421	1,778,818	1,681,853
May	5,095,340	1,506,141	1,521,736
June	4,951,399	2,282,298	2,440,555
July	5,105,389	3,760,121	3,570,700
Aug.	4,877,686	4,358,325	4,622,473
Sept.	5,152,187	4,482,077	4,168,919
Oct.	5,302,736	3,933,134	3,749,898
Nov.	5,606,752	3,069,600	2,777,935

Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires

	Cotton Fabric Pounds	Crude Rubber Pounds	Consumption of Motor Gasoline (100%) Gallons
1931	151,143,715	456,615,428	16,941,750,000
1932	128,981,222	416,577,533	15,698,340,000
1933			
Jan.	7,899,233	27,368,276	1,110,564,000
Feb.	7,263,337	25,123,700	979,608,000
Mar.	6,364,276	21,508,416	1,186,122,000
Apr.	10,460,327	35,169,724	1,267,392,000
May	16,778,354	58,202,264	1,427,958,000
June	19,552,783	67,866,087	1,583,820,000
July	18,709,458	64,936,169	1,447,236,000
Aug.	16,820,552	57,022,618	1,571,892,000
Sept.	13,591,881	45,160,710	1,440,726,000

Rubber Manufacturers Association, Inc., figures representing approximately 80% of the industry with the exception of gasoline consumption.

Tuesday, and on Wednesday quotations were unchanged to 5 points above the day before.

Dollar and sterling prices were the principal influences, and in this connection the resignation of Prof. Sprague who asserted his intention of fighting the inflationary methods of the administration had a dampening effect.

On Thursday drastic weaknesses in other commodities and stocks wiped out rubber gains for the day, with losses of 8 to 12 points. On Friday news of favorable restriction developments sent rubber prices higher again. With no restriction news on Saturday rubber showed few changes and small losses.

Saturday's closing prices were: December 9.07¢ against 8.58 last week; January 9.20 against 8.28; March 9.55 against 9.04; May 9.80 against 9.30; and July 10.04 against 9.55.

The Outside Market was quiet. C.i.f. business is limited by general lack of offerings. Factory interests, closely watching, give every indication that

Foreign Trade Information

For further information concerning the inquiries listed below address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

No.	COMMODITY	CITY AND COUNTRY
*6,213	Nipples	Medan, Sumatra
*6,253	Automatic pencil rubber-tip affixing machine	Toronto, Canada
*6,258	Scrap rubber	Hamburg, Germany
*6,272	Boots and shoes	Casablanca, Morocco
*6,273	Specialty articles and novelties	London, England
*6,308	Tennis balls and soccer footballs	Medan, Sumatra
*6,345	Belting	Bahia, Brazil
*6,357	Rubber machinery and equipment and plastic material making equipment	Blere, France
*6,361	Canvas shoe soles	Port Elizabeth, South Africa
*6,365	Used tires	Nantes, France
*6,366	Plumbers' supplies	Habana, Cuba
*6,401	Abrasive binding (rubber) machinery	Stare Benatky, Czechoslovakia
*6,410	Mechanical sundries and specialties	Goteborg, Sweden
*6,432	Bathing suits, balloons, and toys	Durban, South Africa
*6,445	Mechanical goods	Port-de-Pêche, France
*6,461	Nipples	Medan, Sumatra
*6,485	Surgical goods, hospital supplies, nipples, pacifiers, and baby pants	Habana, Cuba
*6,490	Bathing caps, gloves, plates, sponges, and toys	Buenos Aires, Argentina
*6,491	Tires	Guatemala City, Guatemala
*6,492	Druggists' sundries, mechanical goods, and pencil erasers	Shanghai, China
*6,507	Tire and sole and heel machinery	Monterrey, Mexico
*6,531	Thread	Buenos Aires, Argentina

*Purchase. †Agency. ‡Purchase or agency.

World Rubber Absorption—Net Imports

Long Tons—1933

CONSUMPTION	July	Aug.	Sept.
United States ...	50,184	44,939	35,686
United Kingdom ..	6,566	7,575	5,980
NET IMPORTS			
Australia	2,347	1,500	794
Austria	266	224	..
Belgium	299	325	..
Canada	1,192	1,795	2,620
Czechoslovakia ..	287	2,759	..
Denmark	120	237	156
Finland	33	100	47
France	3,774	5,489	4,111
Germany	4,103	4,193	5,841
Italy	1,146	1,249	..
Japan	1,460	4,426	..
Netherlands	16	209	189
Norway	59	77	90
Russia	2,952	3,312	..
Spain	435	606	790
Sweden	274	202	311
Switzerland	104	64	59
Others	*1,450	*1,450	*1,450
Totals	77,067	80,731	..
Minus U. S. (Cons.)	50,184	44,939	35,686
Total Foreign	26,883	35,792	..

*Estimate to complete table.
Compiled by Rubber Division, Department of Commerce, Washington, D. C.

they are ready to build up their supplies on any favorable news.

Saturday's closing prices, compared with last week's follow: November-December 9½¢ against 8½¢; January-March 9½¢ against 8¾¢; April-June 9½¢ against 8¾¢; and July-September 9½¢ against 8¾¢.

ERNEST JACOBY

Crude Rubber

Liquid Latex

*Carbon Black
Clay*

Stocks of above carried at all times

BOSTON **MASS.**
Cable Address: *Jacobite Boston*

Classified Advertisements

Continued

MACHINERY AND SUPPLIES FOR SALE

FOR SALE: ONE ALLEN TUBER NO. 4, MOTOR DRIVEN; one 18 by 54" Birmingham 4-roll calender; one unused 18 by 30" heavy duty FARREL MILL, chain drive; complete line of W. & P. Mixers, Vacuum Shelf Driers, Calenders, Mills, Colloid Mills, Pebble Mills, Dough Mixers, Hydraulic Presses, Pumps, etc. Rebuilt, guaranteed. What machinery have you for sale? CONSOLIDATED PRODUCTS CO., INC., 13-16 Park Row, New York, N. Y.

**New and Used
RUBBER MACHINERY
M. Norton & Co.
Medford, Mass.**

Morris Trimming Machines

are used by the leading rubber manufacturers of the world.

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HYDRAULIC VALVES



Operating, Globe, Angle, or Check Valves—
Hydraulic Presses, Accumulators, Pumps, etc.
—For almost any size or pressure.

Dunning & Boschert Press Co., Inc.
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NORMAL - CONCENTRATED - PROCESSED

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RUBBER LATEX

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Rubber Equipment Manufacturers & Engineers

MIXING AND MOLDING EQUIPMENT
FOR BAKELITE, PLASTICS, ETC.
STEEL & IRON FOUNDRIES
PATTERN & FORGE SHOPS
MACHINE SHOP

THE ADAMSON MACHINE CO.
AKRON, OHIO

We have served the Rubber Industry for 39 years



GUARANTEED REBUILT MACHINERY

IMMEDIATE DELIVERIES FROM STOCK

MILLS, CALENDERS, TUBERS, HYDRAULIC PRESSES,
PUMPS, VULCANIZERS, TIRE MAKING EQUIPMENT,
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CABLE ADDRESS "URME"

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RUBBER & TRADING CO., Inc.

**CRUDE RUBBER
AND
LIQUID LATEX**

233 Broadway

New York

United States Statistics

Imports of Crude and Manufactured Rubber

	August, 1933		Eight Months Ended August, 1933	
	Pounds	Value	Pounds	Value
UNMANUFACTURED—Free				
Crude rubber	99,136,234	\$5,391,709	533,990,224	\$20,087,508
Liquid latex	2,589,838	196,138	12,661,190	703,026
Jelutong or pontianak	873,403	55,509	7,510,840	427,322
Balata	609,489	527,147	3,140,875	2,152,208
Gutta percha	156,827	11,440	1,014,245	59,724
Siak, scrap, and reclaimed	625,739	4,739	3,901,226	27,966
Totals	103,991,530	\$6,186,682	562,218,600	\$23,457,754
Chicle, crude	53,663	\$8,481	2,149,969	\$557,075
MANUFACTURED—Dutiable				
Rubber soled footwear with fabric uppers	75,939	\$9,980	3,838,895	\$573,510
Rubber toys	40,142	.....	.....	315,542
Druggists' sundries, n. e. s.	.....	498	.....	27,303
Combs, hard rubber	181,992	6,816	2,674,184	81,469
Golf balls	159,216	42,116	925,274	216,367
Tennis and other rubber balls	47,246	4,227	1,459,600	75,781
Tires	302	2,855	21,744	108,749
Other rubber manufactures	.....	55,747	.....	312,180
Totals	.....	\$162,381	.....	\$1,710,901

Exports of Foreign Merchandise

RUBBER AND MANUFACTURES				
Crude rubber	4,939,314	\$302,132	25,586,667	\$1,241,066
Balata	15,121	1,087	129,082	18,963
Guayule	3,400	408	9,160	1,092
Gutta percha, rubber substitutes, and scrap	1,191	269	8,580	1,535
Rubber manufactures	.....	6,373	.....	11,347
Totals	.....	\$310,269	.....	\$1,274,003

Exports of Domestic Merchandise

RUBBER AND MANUFACTURES				
Reclaimed	790,621	\$32,151	4,987,533	\$184,206
Scrap	2,643,360	45,756	29,187,104	396,792
Rubberized automobile cloth, sq. yd.	68,871	26,450	395,481	157,888
Other rubberized piece goods and hospital sheeting, sq. yd.	60,486	24,048	427,429	148,955
Footwear	.....	.....	.....	.....
Boots	6,333	9,675	33,825	68,517
Shoes	8,035	4,115	77,424	33,488
Canvas shoes with rubber soles	20,294	8,675	173,427	95,898
Soles	2,273	4,730	9,755	20,061
Heels	33,648	17,171	215,507	112,425
Water bottles and fountain syringes	24,103	8,499	110,133	38,685
Gloves	5,117	9,220	38,438	74,213
Other druggists' sundries	.....	23,614	.....	182,007
Balloons	23,368	17,642	127,232	107,496
Toys and balls	.....	4,911	.....	24,013
Bathing caps	2,251	3,363	48,426	80,189
Bands	21,732	5,643	140,510	43,842
Erasers	25,785	12,387	190,729	103,371
Hard rubber goods	.....	.....	.....	.....
Electrical goods	75,544	7,629	679,793	62,645
Other goods	.....	9,094	.....	78,328
Tires				
Truck and bus casings, number	21,782	352,525	108,195	1,687,716
Other automobile casings, number	74,689	486,893	509,109	3,357,891
Tubes, auto	67,737	73,111	385,459	390,988
Other casings and tubes, number	3,661	7,502	16,778	35,345
Solid tires for automobiles and motor trucks, number	663	17,228	4,507	115,992
Other solid tires	62,360	7,235	623,331	70,975
Tire sundries and repair materials	.....	29,090	.....	226,060
Rubber and friction tape	65,220	13,958	376,731	80,087
Belting	124,205	51,492	1,046,830	456,852
Hose	245,889	67,585	1,821,766	461,396
Packing	80,242	30,638	646,883	244,855
Thread	89,973	48,798	904,149	479,858
Other rubber manufactures	.....	80,104	.....	625,035
Totals	.....	\$1,540,932	.....	\$10,246,069

Low and High New York Spot Prices

All Prices in Cents per Pound

	November		
	1933*	1932	1931
PLANTATIONS			
Thin latex crepe	8 1/2/10	3 3/8/4 1/8	4 3/8/5 1/8
Smoked sheet, ribbed	7 3/4/9 1/8	3 3/8/3 3/4	4 3/8/5
PARAS			
Upriver fine	8 /9	7 3/4/7 1/2	5 3/4/6 1/4

*Figured to November 25, 1933.

Rubber Goods Production Statistics

	1933		1932	
	August	August	August	August
TIRES AND TUBES				
Pneumatic casings	.....	.....	.....	.....
Production	..... thousands	3,995	..... thousands	2,471
Shipments, total	..... thousands	3,766	..... thousands	2,124
Domestic	..... thousands	3,674	..... thousands	2,065
Stocks, end of month	..... thousands	5,656	..... thousands	5,327
Solid and cushion tires				
Production	..... thousands	16	..... thousands	8
Shipments, total	..... thousands	13	..... thousands	8
Domestic	..... thousands	13	..... thousands	7
Stocks, end of month	..... thousands	24	..... thousands	25
Inner tubes				
Production	..... thousands	3,933	..... thousands	2,199
Shipments, total	..... thousands	3,750	..... thousands	2,002
Domestic	..... thousands	3,685	..... thousands	1,966
Stocks, end of month	..... thousands	5,303	..... thousands	4,902
Raw material consumed				
Fabrics	..... thous. of lbs.	16,821	..... thous. of lbs.	10,116
MISCELLANEOUS PRODUCTS				
Rubber bands, shipments	..... thous. of lbs.	260	..... thous. of lbs.	199
Rubber clothing, calendered				
Orders, net	..... no. of coats and sundries	21,525	..... no. of coats and sundries	13,321
Production	..... no. of coats and sundries	41,610	..... no. of coats and sundries	28,284
Rubber-proofed fabrics, production, total	..... thous. of yds.	5,136	..... thous. of yds.	2,952
Auto fabrics	..... thous. of yds.	466	..... thous. of yds.	268
Raincoat fabrics	..... thous. of yds.	2,791	..... thous. of yds.	1,489
Rubber flooring, shipments	..... thous. of sq. ft.	319	..... thous. of sq. ft.	434
Rubber and canvas footwear				
Production, total	..... thous. of prs.	5,319	..... thous. of prs.	3,576
Shipments, total	..... thous. of prs.	1,898	..... thous. of prs.	1,378
Waterproof	..... thous. of prs.	3,421	..... thous. of prs.	2,201
Shipments, total	..... thous. of prs.	5,126	..... thous. of prs.	3,342
Tennis	..... thous. of prs.	1,640	..... thous. of prs.	1,208
Waterproof	..... thous. of prs.	3,487	..... thous. of prs.	2,134
Shipments, domestic, total	..... thous. of prs.	5,043	..... thous. of prs.	3,272
Tennis	..... thous. of prs.	1,575	..... thous. of prs.	1,175
Waterproof	..... thous. of prs.	3,468	..... thous. of prs.	2,096
Stocks, total, end of month	..... thous. of prs.	13,105	..... thous. of prs.	17,358
Tennis	..... thous. of prs.	3,723	..... thous. of prs.	4,615
Waterproof	..... thous. of prs.	9,382	..... thous. of prs.	12,743
Rubber heels				
Production	..... thous. of prs.	22,632	..... thous. of prs.	11,073
Shipments, total	..... thous. of prs.	18,410	..... thous. of prs.	14,395
Export	..... thous. of prs.	282	..... thous. of prs.	187
Repair trade	..... thous. of prs.	7,352	..... thous. of prs.	4,260
Shoe manufacturers	..... thous. of prs.	10,775	..... thous. of prs.	9,948
Stocks, end of month	..... thous. of prs.	24,123	..... thous. of prs.	24,449
Rubber soles				
Production	..... thous. of prs.	5,177	..... thous. of prs.	2,599
Shipments, total	..... thous. of prs.	4,392	..... thous. of prs.	2,660
Export	..... thous. of prs.	8	..... thous. of prs.	12
Repair trade	..... thous. of prs.	579	..... thous. of prs.	140
Shoe manufacturers	..... thous. of prs.	3,806	..... thous. of prs.	2,508
Stocks, end of month	..... thous. of prs.	3,011	..... thous. of prs.	2,373
Mechanical rubber goods, shipments				
Total	..... thous. of dollars	3,892	..... thous. of dollars	2,152
Belting	..... thous. of dollars	975	..... thous. of dollars	563
Hose	..... thous. of dollars	1,298	..... thous. of dollars	785
Other	..... thous. of dollars	1,619	..... thous. of dollars	804

Source: Survey of Current Business, Bureau of Foreign & Domestic Commerce, Washington, D. C.

London Stocks, September, 1933

	Stocks, September 30				
	Landed Tons	De-livered Tons	1933 Tons	1932 Tons	1931 Tons
LONDON					
Plantation	3,038	3,335	439,184	44,901	79,627
Other grades	11	4	53	41	35
LIVERPOOL					
Plantation	*945	*2,353	*55,735	*58,149	*54,612
Total tons, London and Liverpool	3,994	5,692	494,972	103,091	134,274

*Official returns from the recognized public warehouses.

†P. L. A. stock adjusted by 47 tons.

Imports by Customs Districts

	September, 1933		September, 1932	
	Pounds	Value	Pounds	Value
Massachusetts	11,094,630	\$677,557	4,477,238	\$143,646
New York	77,089,376	4,852,949	48,240,236	1,369,899
Philadelphia	3,234,171	184,126	122,616	2,518
Maryland	4,988,338	244,852	5,820,341	144,625
Mobile	.....	.....	2,565,892	62,593
New Orleans	1,180,617	63,071	.....	.....
Los Angeles	5,047,091	307,186	3,996,466	86,684
San Francisco	584,691	29,845	240,000	7,652
Colorado	392,000	18,886	.....	.....
Ohio	.....	.....	63,380	3,166
Totals	103,610,824	\$6,378,472	65,526,169	\$1,820,783

*Crude rubber including latex dry rubber content.

